ORDER NO.MAD0503001CE

Service Manual

DVD Player / Video Cassette Recorder

Panasonic VHS PAL Hi-Fi

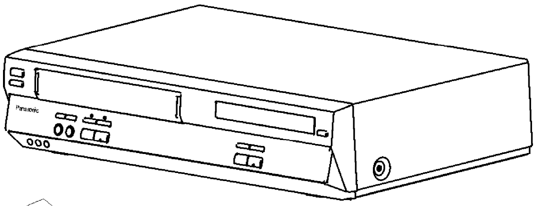
NV-VP23EG / NV-VP23EC / NV-VP23EP / NV-VP28EG / NV-VP28EC / NV-VP33EG / NV-VP33EC / NV-VP33EB / NV-VP33EBL / NV-VP33EP /

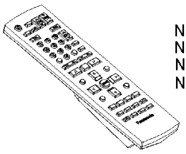
R4-MECHANISM

Colour

(K).......................Black Type

(S).......................Silver Type





NV-VP23EG/EC/EP	EUR7720X70
NV-VP28EG/EC	EUR7720X50
NV-VP33EG/EC/EP	EUR7720X50
NV-VP33EB/EBL	EUR7720X60

Note:
Due to components availability for this product two different Main PCB and Serial No. suffixes are used.

REP00**10** A,B,C,D,E,H	Serial No. Sample: VA5J**A**000123 ↑ Suffix
REP00**24** A,B,C,D,E,H	VA5J**B**000123 ↑ Suffix

SPECIFICATIONS

⚠ WARNING
This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:
Adjustment procedures, Disassembly Procedures and Assembly Procedures for VCR Mechanism Chassis are separate volume from this service manual. Please refer to the service manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).

Model No.	Indication Mark
NV-VP23EG	23EG
NV-VP23EC	23EC
NV-VP23EP	23EP
NV-VP28EG	28EG
NV-VP28EC	28EC
NV-VP33EG	33EG
NV-VP33EC	33EC
NV-VP33EB	33EB
NV-VP33EBL	33EBL
NV-VP33EP	33EP

2. SAFETY PRECAUTIONS

2.1. GENERAL GUIDELINES

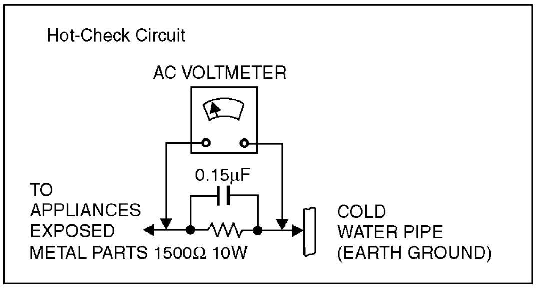
1. **Be careful during removing metal parts, sharp edges.**
2. **When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.**
3. **After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.**
4. **After servicing, make the following leakage current checks to**

prevent the customer from being exposed to shock hazards.

2.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1M Ω and 5.2M Ω .
When the exposed metal does not have a return path to the chassis, the reading must be infinity.

Figure 1



2.1.2. LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5k Ω , 10 watts resistor, in parallel with a 0.15 µ F capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/

2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

3. PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as alminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list.
It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

4. PRECAUTION OF LASER DIODE

CAUTION:

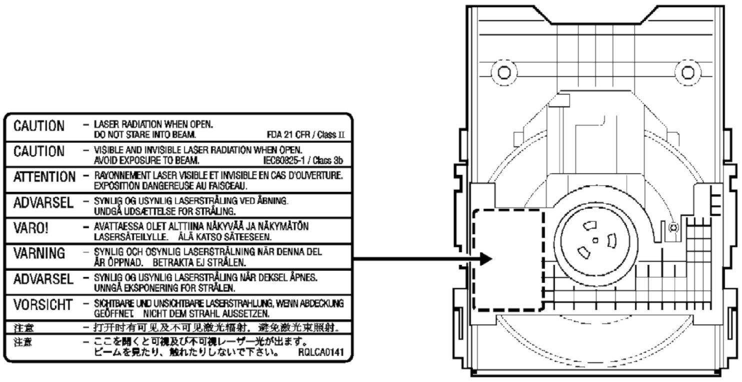
This product utilizes a laser diode with the unit turned "on",
invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm/785 nm
Maximum output radiation power from pickup: 100 µ W/VDE.
Laser radiation from the pickup lens is on a safety level, if following precautions are followed:

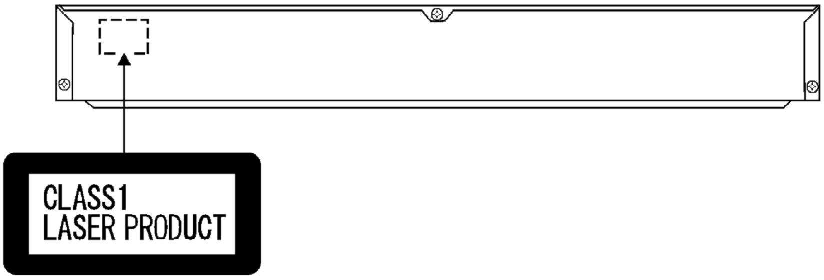
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Recommend not to look at pickup lens.
4. Do not look at the focus lens using optical instruments.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit ausgestrahlt.
Wellenlänge: 662 nm/785 nm
Maximale Strahlungsleistung der Lasereinhei
W/VDE.
Die Strahlung der eingeschalteten Lasereinhe
ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Stra
   der freigelegten Laserdiode gefährlich ist.
2. Den werksseitig justierten Einstellregler de
   Lasereinheit nicht verstellen.
3. Nicht in die Fokussierlinse blicken.
4. Auch nicht mit optischen Instrumenten in
   Fokussierlinse blicken.


CAUTION – LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. FDA 21 CFR / Class II
CAUTION – VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. IEC60825-1 / Class 3b
ATTENTION – RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL – SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO! – AVATTAESSA OLET ALTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING – SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRAKTA EJ STRÅLEN.
ADVARSEL – SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT – SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
注意 – 打开时有可见及不可见激光辐射。避免激光束照射。
注意 – ここを開くと可視及び不可視レーザー光が出ます。ビームを見たり、触れたりしないで下さい。 RQLCA0141


CLASS1
LASER PRODUCT

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

4.1. ABOUT LEAD FREE SOLDER (PbF)

This model uses lead free solder (PbF). For repair use only lead free handsolder.

Caution:

Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70~F (30 - 40~C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 +/-20~F (370 +/-10~C). Pb free solder will tend to splash when heated too high (about 1100~F/ 600~C). When soldering or unsoldering, please completely remove all of the solder on the pins or solder area and be sure to heat the soldering points with the Pb free solder until it melts enough.

5. PREVENTION OF STATIC ELECTRICITY DISCHARGE

The laser diode in the traverse unit (optical pickup) may brake down due to static electricity of clothes or human body. Use due caution to electrostatic breakdown when servicing and handling the laser diode.

5.1. GROUNDING FOR ELECTROSTATIC BREAKDOWN PREVENTION

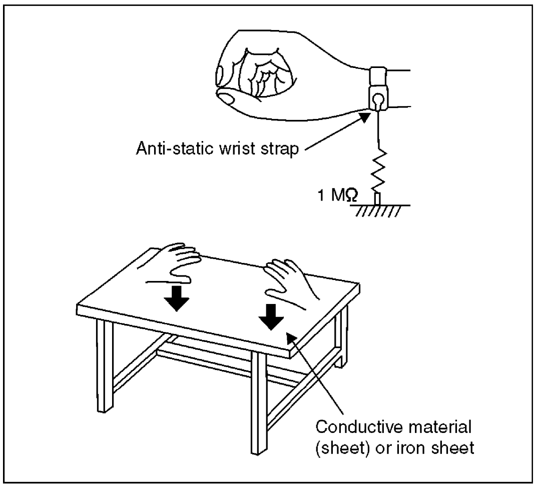
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

5.1.1. WORKTABLE GROUNDING

1. **Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.**

5.1.2. HUMAN BODY GROUNDING

1. **Use the anti-static wrist strap to discharge the static electricity form your body.**



5.1.3. HANDLING OF OPTICAL PICKUP

1. **To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide.)**
2. **Do not use a tester to check the laser diode for the optical pickup. Failure to do so will damage the laser diode due to the power supply in the tester.**

6. GENERAL DESCRIPTION

6.1. OPERATING INSTRUCTIONS

6.2. SERVICE CAUTION

6.2.1. REPLACING IC6002/EEPROM

When the EEPROM: IC6002 is replaced, applicable model code, option code and electrical adjustment data will not be available.
Therefore, enter and/or adjust the necessary data after replacing IC6002 by referring following procedure.

STEP1.REPLACE THE IC6002

1. **Remove the PCB with Mechanism unit by referring the Disassembly procedure.**
2. **Disconnect the AC plug and replace the IC6002.**

STEP2.INPUT THE MODEL & OPTION CODE

1. **Set up the applicable model code and option code by ordering the following table.**

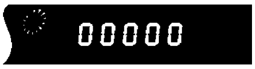
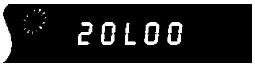
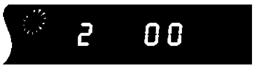
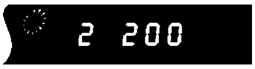
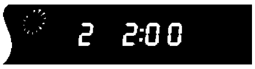
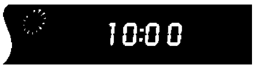
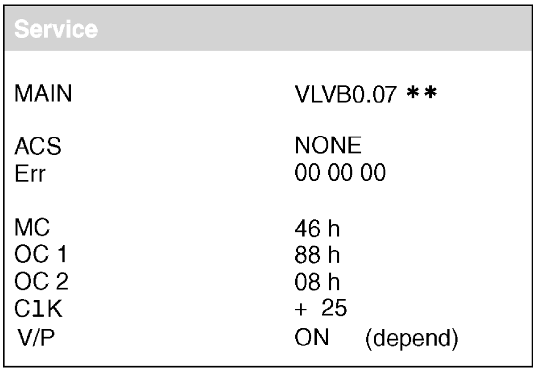
PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode **1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.**	
Activate the Service Mode 2 **2.While keep placing FF key, press the EJECT key in twice.**	
Activate the Entering Mode. **3.Press the EJECT key for more than 3 seconds.**	
Set the Mode 2. **4.Press the CH UP key in twice.**	
Display the Setting Code. **5.Press the POWER Button to turn the power on.**	 **(Colon starts flashing)**
Enter the Model and Option Code. **6.Service Screen is displayed on the monitor.** **7.Set the applicable Model and Option code by using REW, PLAY, STOP and FF keys on the Remote Controller. (See Fig.S1 & S2)**	
Exit from Service Mode. **8.Press the POWER Button to turn the power off.** **9. Press FF and EJECT keys simultaneously in 6 times.**	 **(Normal Indication)**

Fig. S1 Service Screen Sample for NV-VP23EP



```
Service

MAIN                VLVB0.07 **

ACS                 NONE
Err                 00 00 00

MC                  46 h
OC 1                88 h
OC 2                08 h
ClK                 +  25
 V/P                ON     (depend)
```

Fig. S2 Model Code & Option Code

Model No.	Model Code	Option Code 1	Option Code 2
NV-VP23EG	41h	88h	08h
NV-VP23EC	42h	88h	08h
NV-VP23EP	46h	88h	08h
NV-VP28EG	41h	F8h	18h
NV-VP28EC	42h	F8h	18h
NV-VP33EG	41h	FCh	18h
NV-VP33EC	42h	FCh	18h
NV-VP33EB	43h	DCh	18h
NV-VP33EBL	44h	DCh	18h
NV-VP33EP	46h	FCh	18h

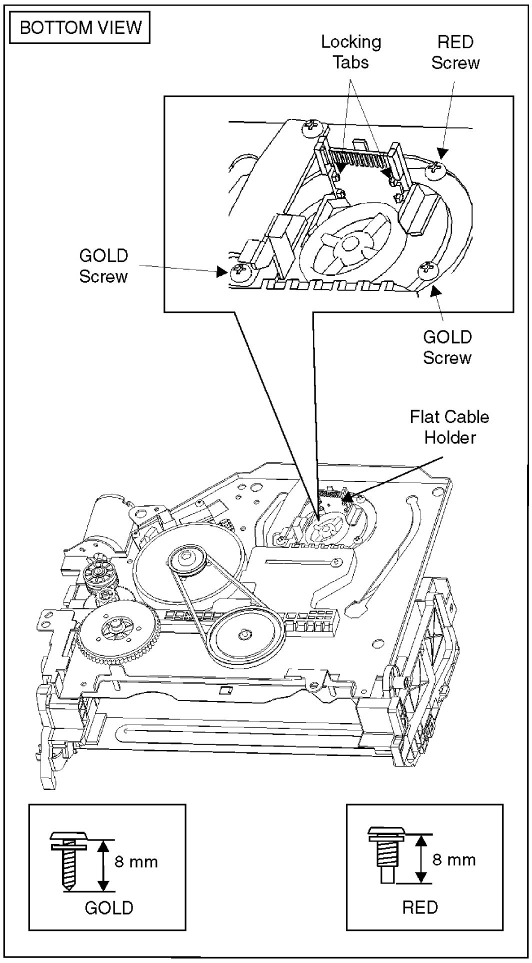
NOTE:
Since all electrical adjustments data is still not available, perform the Electrical Adjustment continuously.

6.2.2. CYLINDER UNIT REPLACEMENT

NOTE:

Replacing only Upper Cylinder unit of R4 Mechanism can not be performed, as securing of RT gap is impossible out of factory, please replace the cylinder by whole Cylinder Unit. The Compatibility Adjustment should be performed after replacement of the DD Cylinder Unit.

1. **Remove the Mechanism Unit from Main PCB / Chassis referring to "Disassembly Procedure".**
2. **Unlock 2 locking tabs on a side to release the Cylinder Flat Cable as shown.**
   CAUTION:
   Handle the Cylinder Flat Cable with care. When it damaged, you should replace whole Cylinder unit.
3. **Remove the RED screw and GOLD screw to disassemble the Cylinder Unit.**

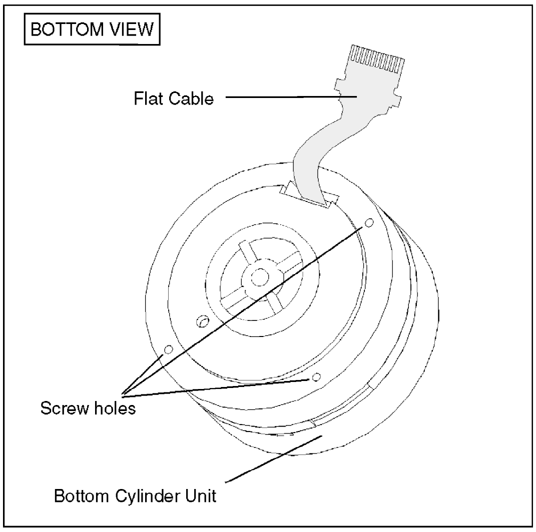

BOTTOM VIEW
Locking Tabs
RED Screw
GOLD Screw
GOLD Screw
Flat Cable Holder
8 mm
GOLD
8 mm
RED

NOTE:

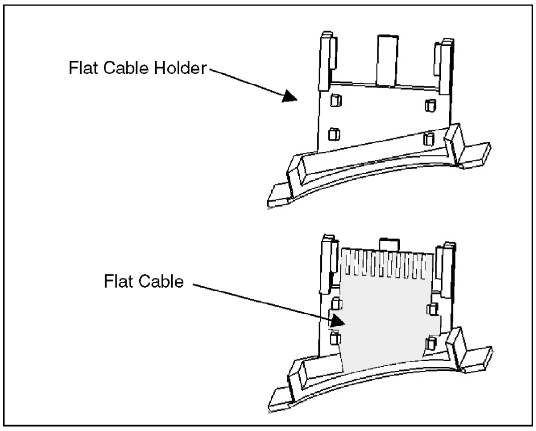
When reassembling, perform the steps in the reverse order, and perform the COMPATIBILITY ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

6.2.3. ATTENTION FOR REPLAYING THE DD CYLINDER

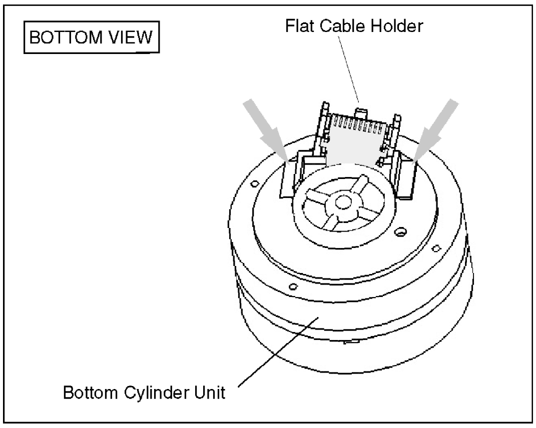
1. **Put the gloves on your hands.**
2. **Turn the DD Cylinder Unit over.**


BOTTOM VIEW
Flat Cable
Screw holes
Bottom Cylinder Unit

3. Insert the Flat Cable into the Flat Cable Holder


Flat Cable Holder
Flat Cable

4. Insert the Flat Cable Holder to the DD Cylinder Unit.


BOTTOM VIEW
Flat Cable Holder
Bottom Cylinder Unit

5. The "COMPATIBILITY ADJUSTMENT" should be performed after the replacement of the DD Cylinder Unit.

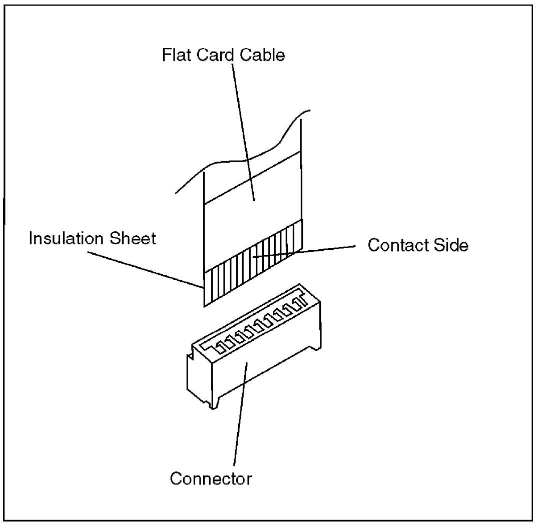
NOTE:

In case that you have inserted the Flat Cable Holder

(FPC Holder) to the DD Cylinder Unit before inserting the Flat Cable (Flexible card) into the Flat Cable Holder. Pushing stopper portion of the Flat Cable Holder with a small minus screw driver, remove the Flat Cable Holder while paying attention for not to scratch the DD Cylinder and not to break the Head Chip as shown below.

6.2.4. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

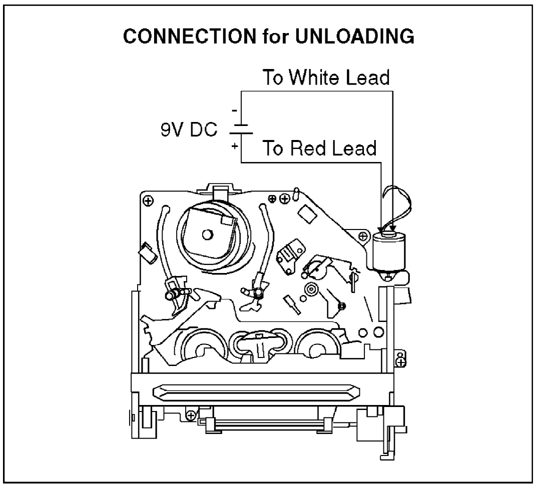


6.3. REMOVAL OF CASSETTE TAPE

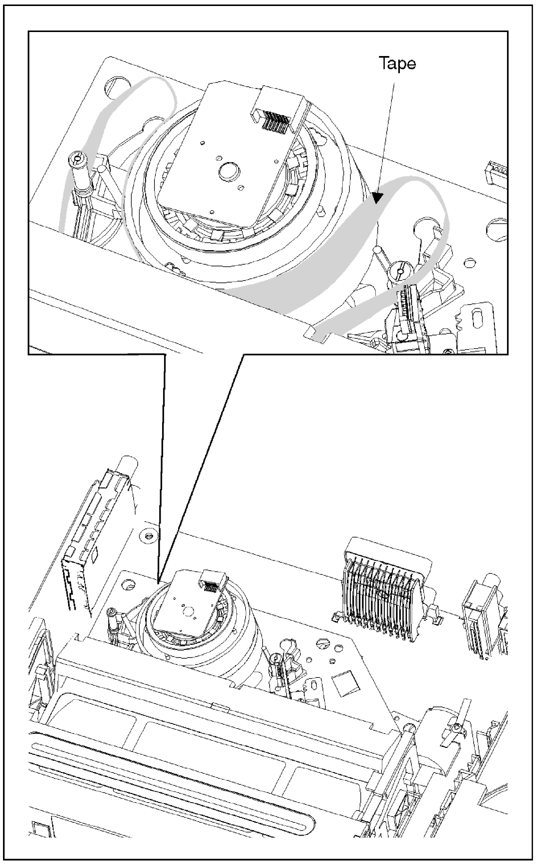
When the cassette tape could not be uninstalled from an electrical malfunction, there are two ways to remove a cassette tape.

1. **Removal by compulsory unloading.**
   - **A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.**
   - **B. Press STOP button in order to unload the mechanism.**
     (Pay attention to tape slack)
     Service Mode Indication:
     7 0L 00 (STOP) 7 0L A2 (EJECT)

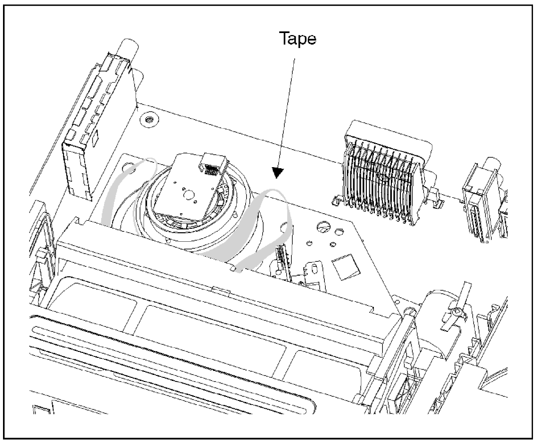
2. **Removal by manual operation by rotating the Loading Motor with the batteries.**
   - **A. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring to the Disassembly Procedures.**
   - **B. Connect one batterie (9V spec.) to the Loading Motor in series for supplying 9V to rotate the Loading Motor.**


CONNECTION for UNLOADING
To White Lead
9V DC
-
+
To Red Lead

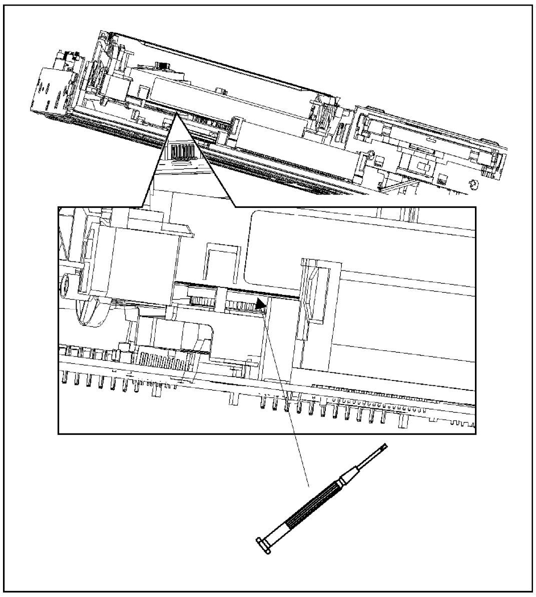
C. Stop unloading just before unloading would be completed.



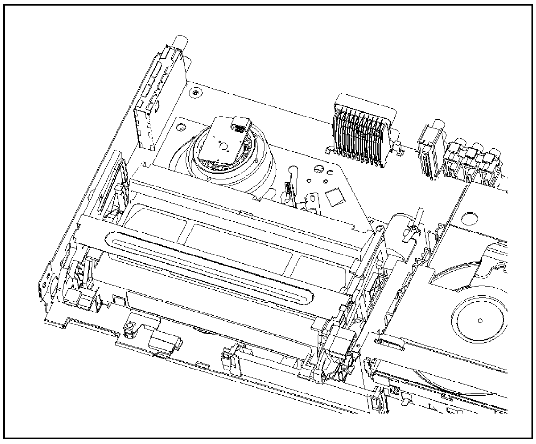
D. Then the tape becomes slack.

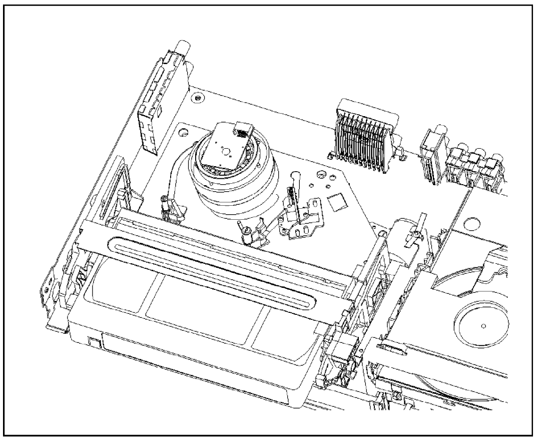


E. Rotate the S-Reel by a small minus screwdriver to remove the slack tape.

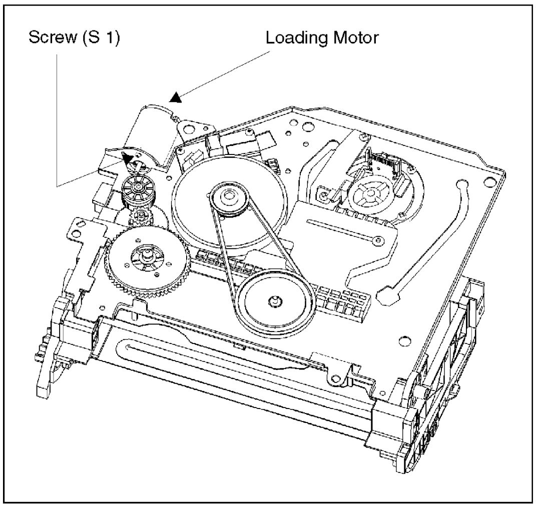


F. Then unload again to remove the cassette tape.

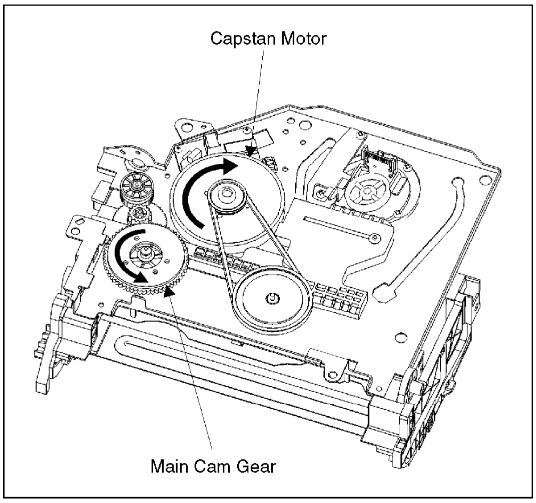




3. Removal by manual operations after uninstalling the mechanism.
   - A. Disconnect the AC plug remove the Top Panel, Front Panel and the Mechanism by referring to the Disassembly Procedures.
   - B. Remove the Screw (S1) and remove the Loading Motor both.

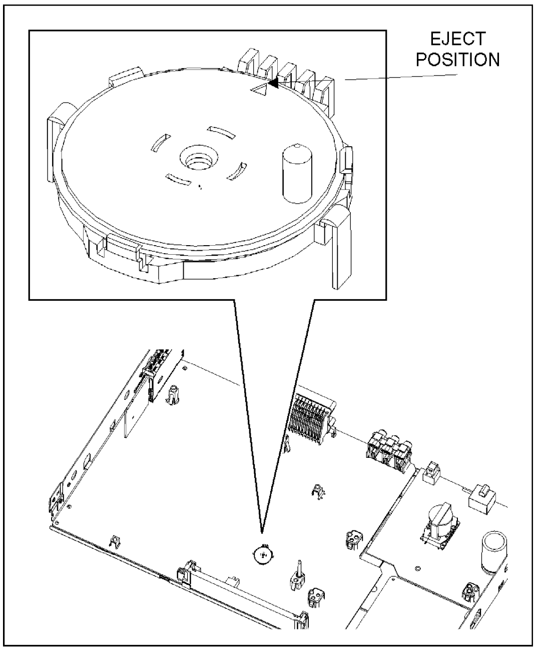


   - C. Rotate the Main Cam Gear counter-clockwise until just before the unloading would be completed.
   - D. Rotate the Capstan Motor clockwise to remove the slack tape.



E. Rotate the Main Cam Gear counter-clockwise again to remove the cassette-tape.

F. Set the Position Switch to EJECT POSITION certainly.



G. Install the Loading Motor and tighten screw (S1).

6.4. SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY

Refer to the Service Manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).

6.5. INTRODUCTION OF VIDEO / HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [for end users] for all VHS/SVHS VCP and VCR.

2. **These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.**
3. **These improve the efficiency of video head cleaning service and shortening cleaning time for end users.**

VFK0923FT (For Service usage)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**20 m**
Usability in a Path	**180 Times**

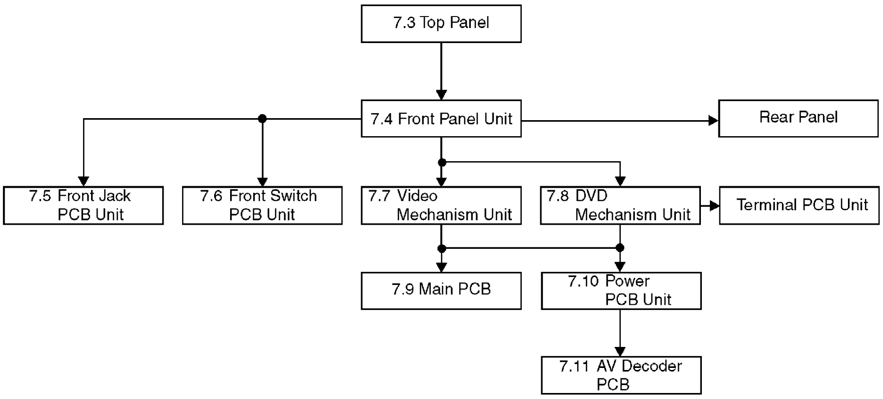
VFK0823FSE (For end users)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**3.34 m**
Usability in a Path	**30 Times**

Note:

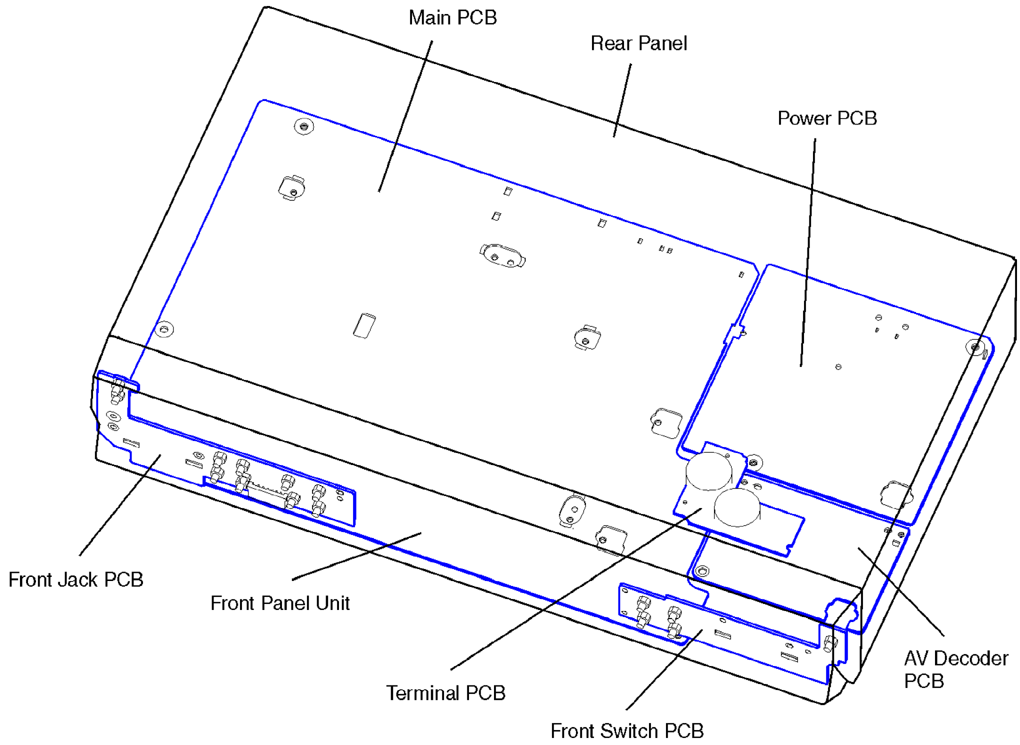
The tape material itself is the same in both types.

7. DISASSEMBLING THE CASING AND CHECKING PCBs

7.1. DISASSEMBLY PROCEDURE

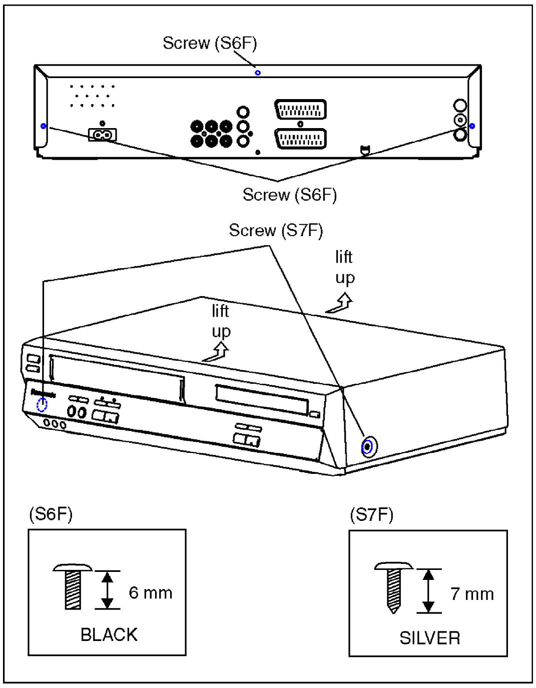

7.3 Top Panel
7.4 Front Panel Unit
Rear Panel
7.5 Front Jack PCB Unit
7.6 Front Switch PCB Unit
7.7 Video Mechanism Unit
7.8 DVD Mechanism Unit
Terminal PCB Unit
7.9 Main PCB
7.10 Power PCB Unit
7.11 AV Decoder PCB

7.2. CASING PARTS AND PCB POSITIONS


Main PCB
Rear Panel
Power PCB
Front Jack PCB
Front Panel Unit
Terminal PCB
Front Switch PCB
AV Decoder PCB

7.3. TOP PANEL

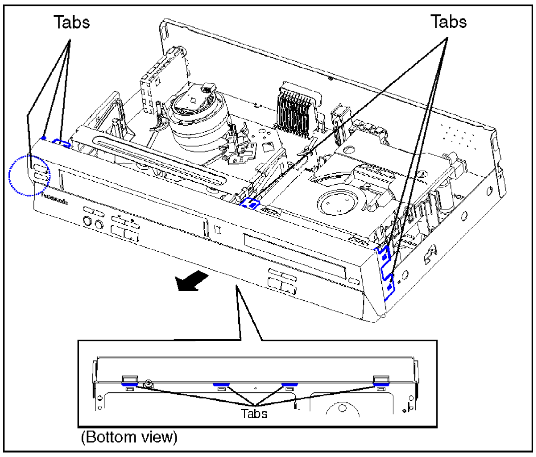
1. Unscrew the Screws.


Screw (S6F)
Screw (S6F)
Screw (S7F)
lift up
lift up
(S6F)
6 mm
BLACK
(S7F)
7 mm
SILVER

7.4. FRONT PANEL UNIT

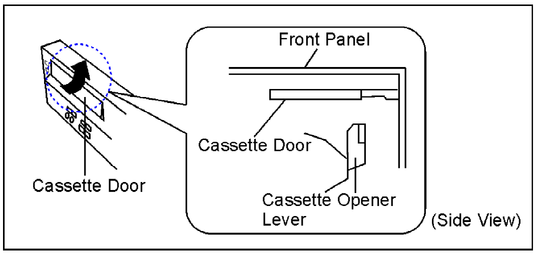
1. Unscrew the Screw.

2. Remove the Tabs.


Tabs
Tabs
Tabs
(Bottom view)

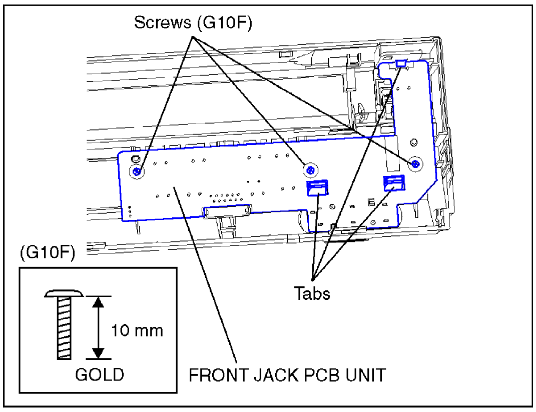
Note:

When attaching Front Panel, in order to hook Cassette Door Opener Lever to Cassette Door, push up cassette door in the direction of arrow and insert a front panel.


Front Panel
Cassette Door
Cassette Door
Cassette Opener Lever
(Side View)

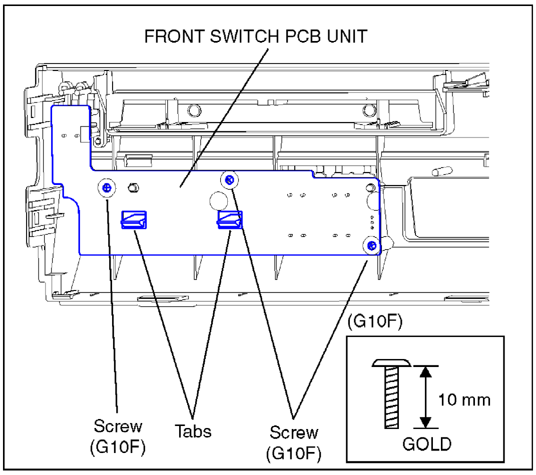
7.5. FRONT JACK PCB UNIT

1. Unscrew the Screws.
2. Remove the Tabs.


Screws (G10F)
(G10F)
10 mm
GOLD
Tabs
FRONT JACK PCB UNIT

7.6. FRONT SWITCH PCB UNIT

1. Release the Screws.
2. Remove the Tabs.


FRONT SWITCH PCB UNIT
(G10F)
10 mm
GOLD
Screw
(G10F)
Tabs
Screw
(G10F)

7.7. VIDEO MECHANISM UNIT

1. Unscrew the Screws.

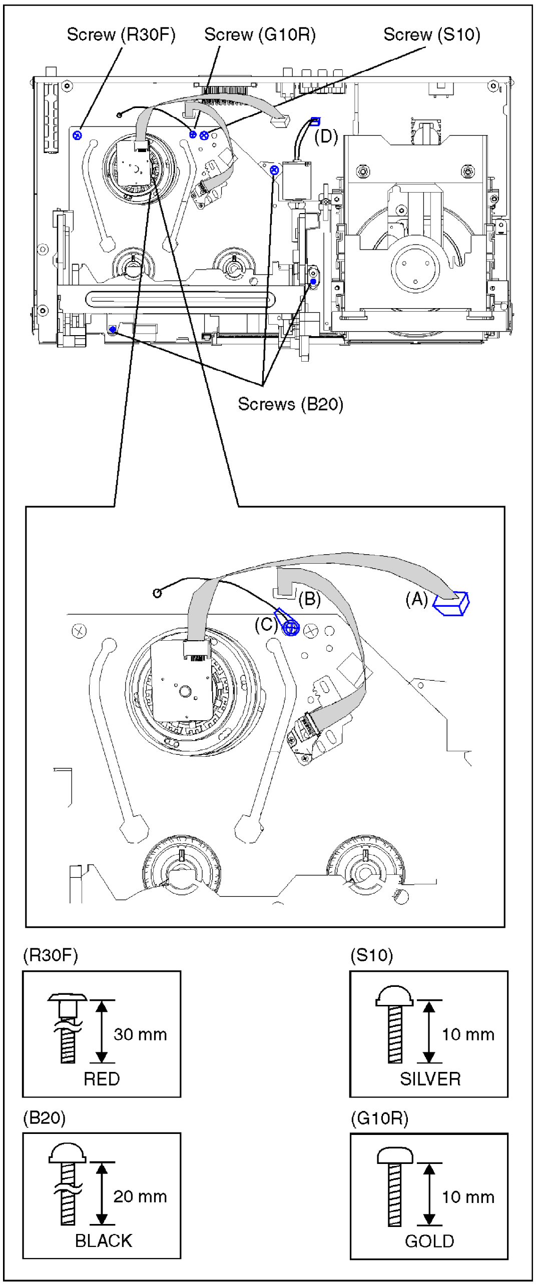
2. Disconnect the Cylinder Connector (A).

3. Disconnect the A/C Head Connector (B).

4. Disconnect the Connector (C).

5. Disconnect the Loading Motor Connector (D).

6. Remove the VHS Mechansim Unit.


Screw (R30F)
Screw (G10R)
Screw (S10)
(D)
Screws (B20)
(B)
(A)
(C)
(R30F)
30 mm
RED
(S10)
10 mm
SILVER
(B20)
20 mm
BLACK
(G10R)
10 mm
GOLD

7.8. DVD MECHANISM UNIT

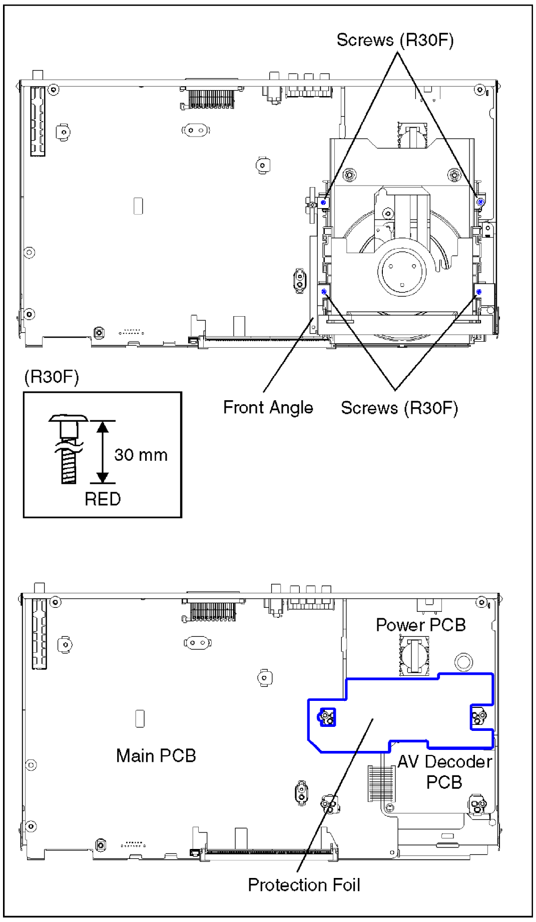
1. Unscrew the Screws.

2. Lift up the DVD Mechanism Unit.

3. Remove the Cables.

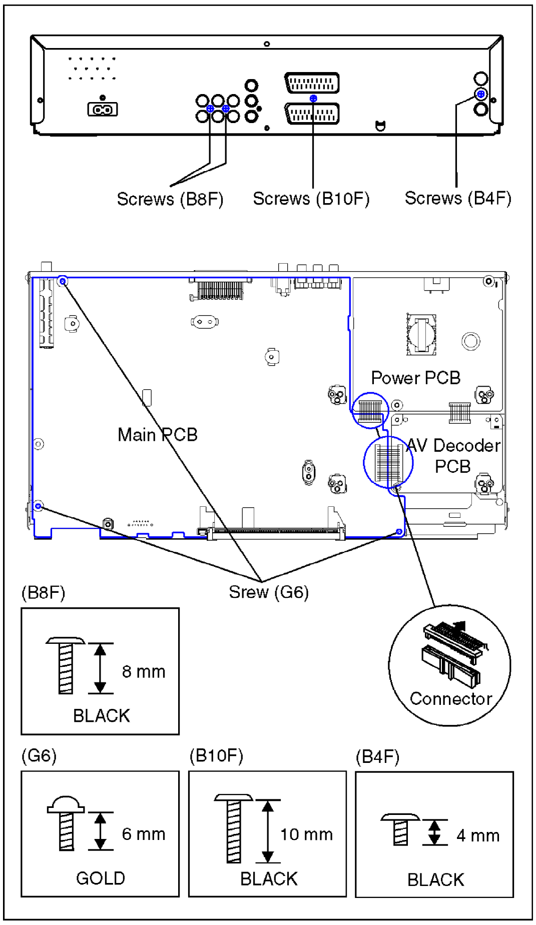
4. Remove the DVD Mechanism Unit.

5. Remove the Protection Foil.


Screws (R30F)
(R30F)
30 mm
RED
Front Angle
Screws (R30F)
Power PCB
Main PCB
AV Decoder PCB
Protection Foil

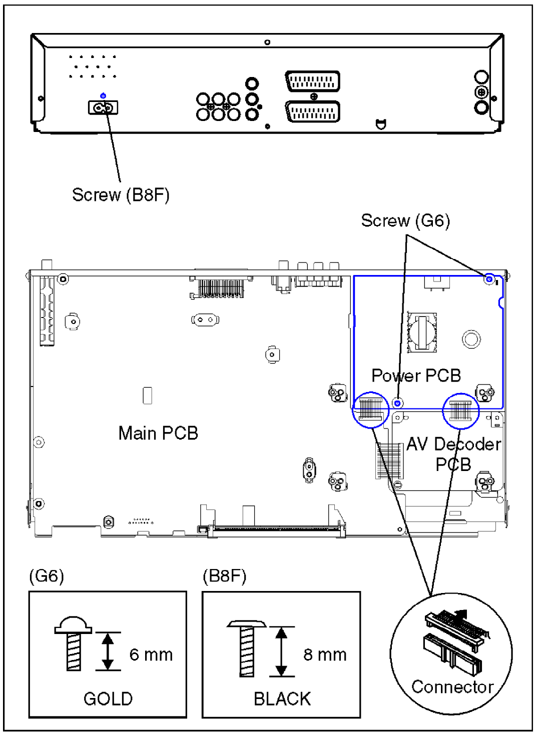
7.9. MAIN PCB UNIT

1. Unscrew the Screws.
2. Release the Connectors.
3. Remove the Main PCB Unit.


Screws (B8F)
Screws (B10F)
Screws (B4F)
Power PCB
Main PCB
AV Decoder PCB
(B8F)
Srew (G6)
8 mm
BLACK
Connector
(G6)
6 mm
GOLD
(B10F)
10 mm
BLACK
(B4F)
4 mm
BLACK

7.10. POWER PCB UNIT

1. Unscrew the Screws.
2. Release the Connectors.
3. Remove the Power PCB Unit.

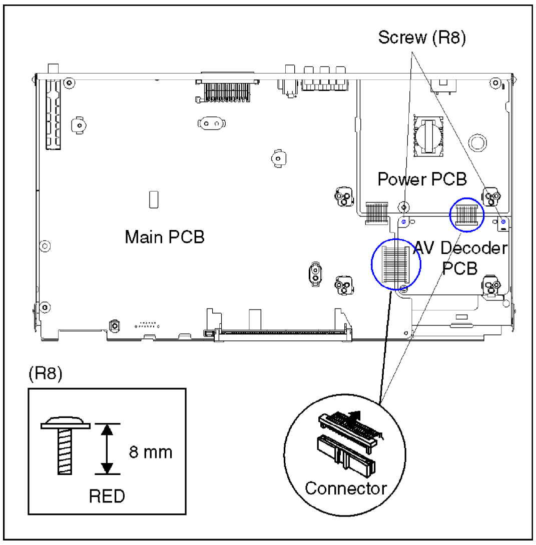

Screw (B8F)
Screw (G6)
Power PCB
Main PCB
AV Decoder PCB
(G6)
6 mm
GOLD
(B8F)
8 mm
BLACK
Connector

7.11. AV DECODER PCB UNIT

1. Unscrew the Screws.

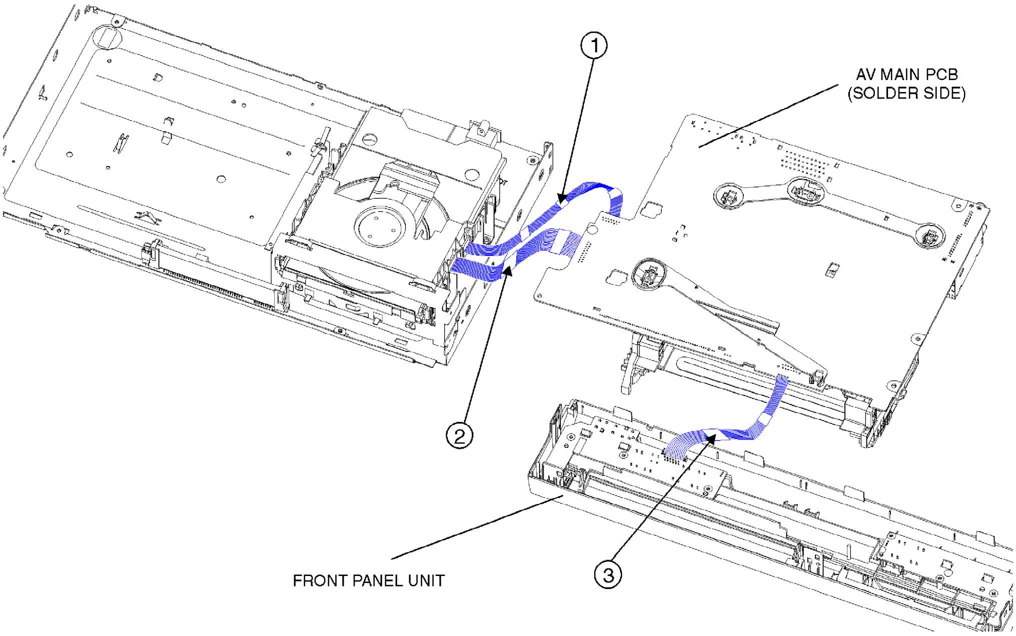
2. Release the Connectors.

3. Remove the AV Decoder PCB Unit.

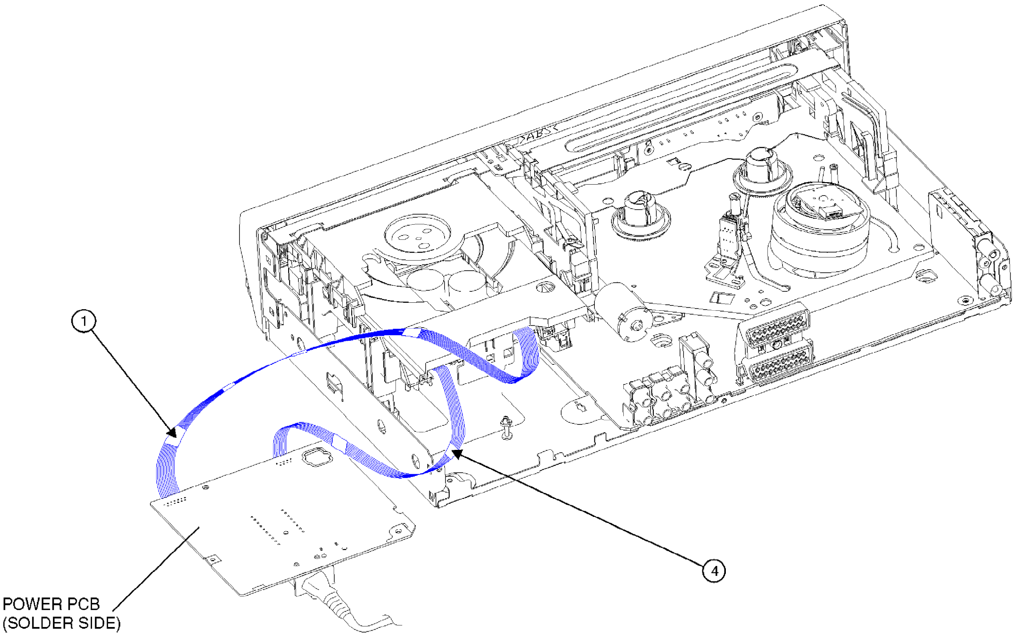

Screw (R8)
Power PCB
Main PCB
AV Decoder PCB
(R8)
8 mm
RED
Connector

7.12. SERVICE POSITION

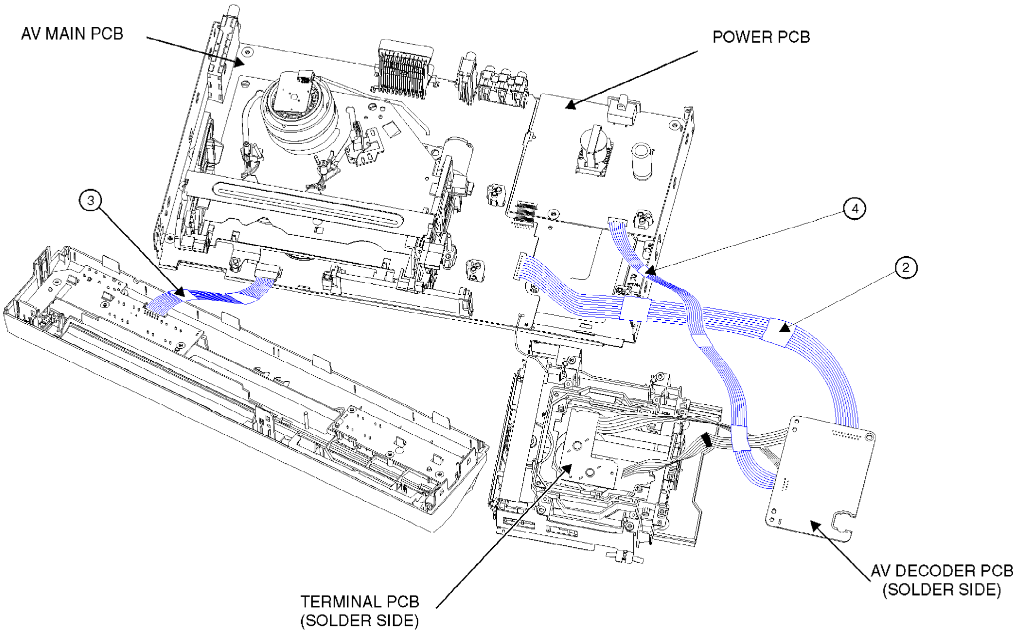
7.12.1. SERVICE POSITION OF THE AV MAIN PCB


①
AV MAIN PCB
(SOLDER SIDE)
②
FRONT PANEL UNIT
③

7.12.2. SERVICE POSITION OF THE POWER SUPPLY PCB


①
④
POWER PCB
(SOLDER SIDE)

7.12.3. SERVICE POSITION OF THE DECODER PCB AND TERMINAL PCB



7.12.4. SERVICE TOOLS AND EQUIPMENT

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S15 or DVDT-S01
	Hex wrench	Available on sales route.
Inspection	1 Extension cable (13pins) PS1301 (Power PCB) - P1001 (AV Main PCB)	VFK1876
	2 Extension cable (19pins) P8003 (AV Decoder PCB) - PS4301 (AV Main PCB)	RFKZ0170
	3 Extension cable (12pins) PP4801 (Front Jack PCB) - PS7501 (AV Main PCB)	RFKZ0215
	4 Extension cable (9pins) P8002 (AV Decoder PCB) - PS1302 (Power PCB)	RFKZ0288
	DVD unit adjustment stand 1	VFK1727
Others	Screw lock	RZZ0L01
	Grease 1	RFKXGAK152
	Grease 2	RFKXPG641
	Oil (1)	RFKXGA1280
Confirmation	CD test disc	PVCD-K06 or any other commerci available disc
	VCD test disc	PVCD-K06 or any other commerci available disc

8. OPTICAL PICKUP SELF-DIAGNOSIS AND /

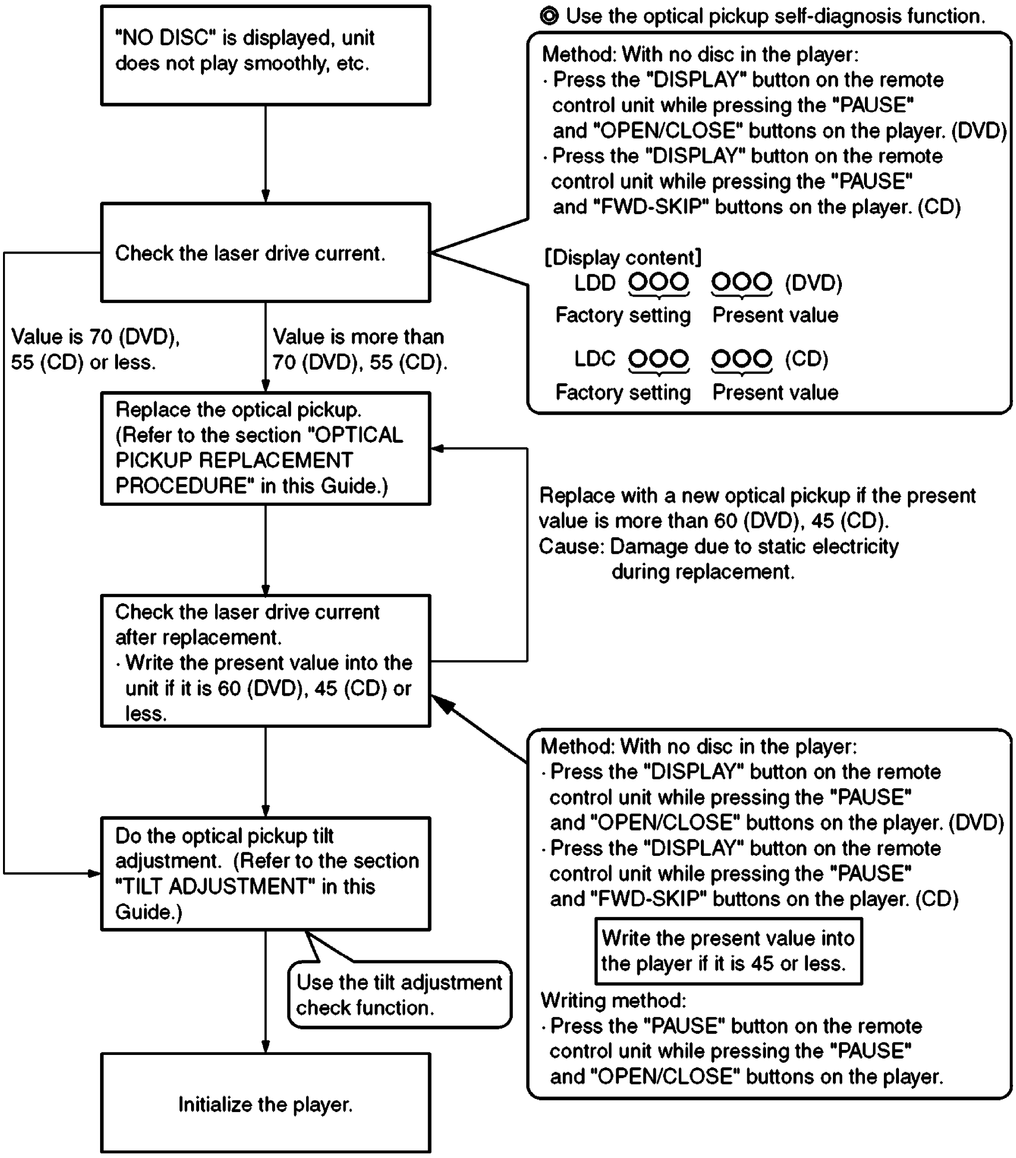
REPLACEMENT PROCEDURE

8.1. SELF-DIAGNOSIS

The optical pickup self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective Self-diagnosis and tilt adjustment. Be sure to use the self-diagnosis function before replacing the optical pickup when "NO DISC" is displayed. As a guideline, you should replace the optical pickup when the value of the laser drive current is more than 55.

Note:

Press the power button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the result will be incorrect.)


"NO DISC" is displayed, unit does not play smoothly, etc.
Check the laser drive current.
Value is 70 (DVD), 55 (CD) or less.
Value is more than 70 (DVD), 55 (CD).
Replace the optical pickup. (Refer to the section "OPTICAL PICKUP REPLACEMENT PROCEDURE" in this Guide.)
Check the laser drive current after replacement.
· Write the present value into the unit if it is 60 (DVD), 45 (CD) or less.
Do the optical pickup tilt adjustment. (Refer to the section "TILT ADJUSTMENT" in this Guide.)
Use the tilt adjustment check function.
Initialize the player.
◎ Use the optical pickup self-diagnosis function.
Method: With no disc in the player:
· Press the "DISPLAY" button on the remote control unit while pressing the "PAUSE" and "OPEN/CLOSE" buttons on the player. (DVD)
· Press the "DISPLAY" button on the remote control unit while pressing the "PAUSE" and "FWD-SKIP" buttons on the player. (CD)
[Display content]
LDD OOO OOO (DVD)
Factory setting Present value
LDC OOO OOO (CD)
Factory setting Present value
Replace with a new optical pickup if the present value is more than 60 (DVD), 45 (CD).
Cause: Damage due to static electricity during replacement.
Method: With no disc in the player:
· Press the "DISPLAY" button on the remote control unit while pressing the "PAUSE" and "OPEN/CLOSE" buttons on the player. (DVD)
· Press the "DISPLAY" button on the remote control unit while pressing the "PAUSE" and "FWD-SKIP" buttons on the player. (CD)
Write the present value into the player if it is 45 or less.
Writing method:
· Press the "PAUSE" button on the remote control unit while pressing the "PAUSE" and "OPEN/CLOSE" buttons on the player.

8.2. CAUTIONS TO BE USED BEFORE REPLACING THE OPTICAL PICKUP UNIT AND SPINDLE MOTOR ASSEMBLY

Before replacing the optical pickup unit and spindle motor assembly, check the total using hours for each of them. The checking method is as follows:

	Operating state & Key operation	Displ
Using hours of CD laser	Press “PAUSE”, “FWD-SKIP” and “5” on the remote control in this order while the unit is stopped	T1_xxxx_yyyy yyyy: total hou displayed by 4 figures (unit: 1
Using hours of DVD laser	Press “PAUSE”, “FWD-SKIP” and “5” on the remote control in this order while the unit is stopped	T1_xxxx_yyyy xxxx: total hou displayed by 4 figures (unit: 1
Using hours of SP motor	Press “PAUSE”, “FWD-SKIP and “6” on the remote control in this order while the unit is stopped	T2_xxxx xxxx: total hou displayed by 4 figures (unit: 1
Resetting using hours of CD and DVD lasers (Simultaneous resetting)	Press “STOP”, “FWD-SKIP” and “5” on the remote control in this order while displaying Timer 1 data	T1_0000_0000
Resetting using hours of the motor	Press “STOP”, “FWD-SKIP” and “6” on the remote control in this order while displaying Timer 2 data	T2_0000

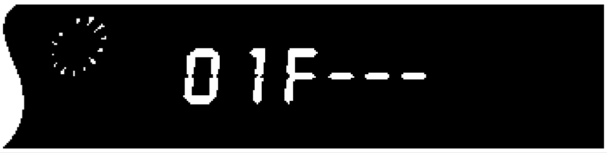
Cautions to be taken when replacing the optical pickup
The optical pickup may break down due to the static electricity of human body. Take proper protection measures against static electricity before repairing the parts around the optical pickup. (See the page describing the PREVENTION OF STATIC ELECTRICITYDISCHARGE.)

1. **Do not touch the areas around the laser diode and actuator.**
2. **Do not judge the laser diode with a tester. (The tester will be damaged easily.)**

9. SELF-DIAGNOSIS FUNCTION AND SERVICE MODES

9.1. SERVICE MODE TABLE 1

The service modes can be activated by pressing various button combination on the player and remote control unit.

Player buttons	Remote control unit buttons	Application	N
PLAY (DVD) + OPEN/CLOSE	0	Displaying the UHF display 	Refer to 9.1. Self Diagnos Functio Display)
	5	Jitter check, tilt adjustment *Display shows J_xxx_yyy_zz "yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focusdrive value. Refer to section 11.3. for Optical Pickup Tilt Adjustment Procedure.	Refer to 11.3. Op Pickup Adjustm
	6	Checking the region numbers and broadcast system	
	7	Checking the program version	Check t FLASH progra
	9	Lighting Confirmation Function of Display Tube	
	FUNCTIONS	Checking the laser drive current	Refer to 10.8. Op Pickup Replace Procedu
	PAUSE	Writing the laser drive current value after replacing the optical pickup (do not use for anything other than optical pickup replacement)	
PAUSE SKIP/ SEARCH<< OPEN/CLOSE		Initializing the DVD player (restoring factory preset settings)	Refer to 9.5. Initi DVD pla

9.2. DVD SELF DIAGNOSTIC FUNCTION-ERROR CODE

Error Code	Error Content	Additional error explanation
U11	Focus error	
H01	Tray loading error	
H02	Spindle servo error	(Spindle servo, DSC SP motor, CLV servo e
H03	Traverse servo error	
H04	Tracking servo error	
H05	Seek error	
H06	Power error	Cannot switch off the power because of th and system computer communication erro
H07	Spindle motor drive error	
F103	Illegal highlight Position	Big possibility of disc specification violatic highlight display
F498	No communication between Front Micro Computer and Main Micro Computer after power on	
F499	No response from Main Micro Computer when key code is sent from Front Micro Computer to Main Micro Computer	Main Micro Computer hangs up
F4FF	Force initialize failure (time out)	
F500	DSC error	DSC stops in the occurence of servo error focus error, etc)
F501	DSC not Ready	DSC-system computer communication errc (Communication failure caused by idling o
F502	DSC Time out error	Similar disposal as F500
F503	DSC communication Failure	Communication error (result error occured communication command was sent)
F505	DSC Attention error	Similar disposal as F500
F506	Invalid media	Disc is flipped over, TOC unreadable, inco disc
F600	Access failure to management information caused by demodulation error	Operation stopped because navigation dat accessible caused by the demodulation de
F601	Indeterminate sector ID requested	Operation stopped caused by the request t abnormal ID data
F602	Access failure to LEAD-IN caused by demodulation error	LEAD IN data unreadable
F603	Access failure to KEYDET caused by demodulation error	Access failure to CSS data of disc
F610	ODC abnormality	No permission for command execution
F611	6626 QCODE don’t read Error	Access failure to seek address in CD serie
F612	No CRC OK for a specific time	Access failure to ID data in DVD series
F630	No reply to KEY DET enquiry	(for internal use only)
F631	CPPM KEY DET is not available till the FILE terminal	(CPPM file system is unreadable caused b scratches)

Error Code	Error Content	Additional error explanation
F632	CPPM KEY DET is not available	Been revoked or falsified
F103	Illegal highlight Position	Big possibility of disc specification violatic highlight display
F700	MBX overflow	When replying message to disc manager
F701	Message command does not end	Next message is sent before replying to dis manager
F702	Message command changes	Message is changed before it is sent as a r disc manager
F880	Task number is not appropriate	Message coming from a non-existing task
F890	Sending message when message is being sent to AV task	Sending message to AV task
F891	Message couldn't be sent to AV task	Begin sending message to AV task
F893	FROM falsification	
F894	EEPROM abnormality	
F895	Language area abnormality	Firm version agreement check for factory p setting failure prevention
F896	No existence model	Firm version agreement check for factory p setting failure prevention
F897	Initialize is not completed	Initialize completion check for factory pres failure prevention
F8A0	Message command is not appropriate	Begin sending message to AV task

Note:

An error code will be canceled if a power supply is turned OFF.

***1: CPPM is the copy guard function beforehand written in the disk for protection of copyrights.**

9.3. LAST ERROR CODE SAVED DURING NO PLAY

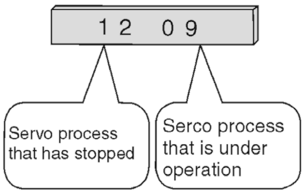
Error code	Error Content	System computer	Setting task	System computer error cod
F0BF	6) Cannot playback because physical layer is not recoginizable	PCND_NOPLAY PHYSICAL 0x50	DiscManager	0xDOBF
F0C0	8) DVD: Cannot playback because it is not DVD Video /Audio/VR	PCND_NOPLAY VIDEO 0x70	DiscManager	0xDOC0
F0C1	9) DVD: Prohibited by the restricted region code	PCND_NOPLAY RCD 0x80	DiscManager	0xDOC1
F0C2	A) DVD: PAL restricted playback	PCND_NOPLAY PAL 0x90	DiscManager	0xDOC2
F0C3	B) DVD: Parental lock setting prohibits the playback of the entire title	PCND_NOPLAY PTL 0xA0	DiscManager	0xDOC3
F0C4	C) VCD: Prohibited because it is in PHOTO CD format	PCND_NOPLAY PHOTO CD 0xB0	DiscManager	0xDOC4
F0C5	VCD/CD: Prohibited because it is CDROM without CD-DA	PCND_NOPLAY CDROM 0xC0	DiscManager	0xDOC5

9.4. SERVICE MODE TABLE 2

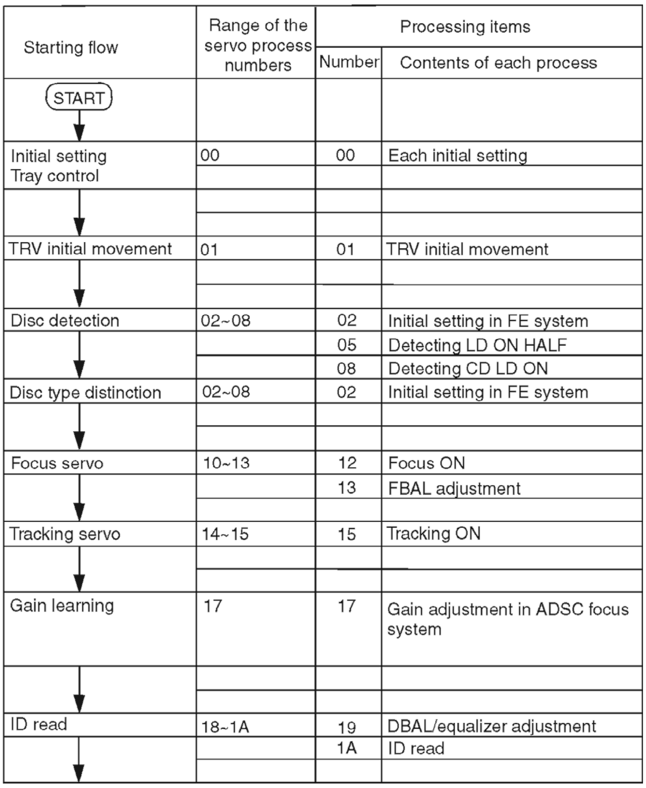
Pressing various button combinations on the player and remote control unit can activate the service modes.

9.5. SERVO PROCESS FLOW

Specification of the servo process display in the starting flow


1 2 0 9
Servo process that has stopped
Serco process that is under operation

(Restrictions)
All processes that are under operation cannot be displayed due to the limit of the processing time.



Starting flow	Range of the servo process numbers	Processing items	
		Number	Contents of each process
START			
Initial setting Tray control	00	00	Each initial setting
TRV initial movement	01	01	TRV initial movement
Disc detection	02~08	02	Initial setting in FE system
		05	Detecting LD ON HALF
		08	Detecting CD LD ON
Disc type distinction	02~08	02	Initial setting in FE system
Focus servo	10~13	12	Focus ON
		13	FBAL adjustment
Tracking servo	14~15	15	Tracking ON
Gain learning	17	17	Gain adjustment in ADSC focus system
ID read	18~1A	19	DBAL/equalizer adjustment
		1A	ID read

9.6. DVD SERVO PROCESS DISPLAY MODE

In starting operation of the player, a number is allotted to each servo process so that the operation of each step can be seen. The relation between the process and the displayed number are as follows:

Number allotment to the servo process.

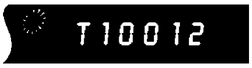
Process classification	Each processing item	Description	Proce
Initial start process	Initial start	The process starts after the tray is loaded. (The state is changed to “READY” or “PREPARE”.)	0~40
	Secondary learning	Servos for the DVD-DL 1st layer and the CD-DA double speed are learned in this step.	50~7F
Restart process	Restart	When a user operates in the “READY” state, each servo is turned on.	80~9F
Seek process	Seek	The optical pickup is moved to the disc destination in this process.	A0~B

Process classification	Each processing item	Description	Proce
Repair process	Recover		
	(Error check)	An error is searched in the PLAY/SEEK state.	C1~C3
	(Attention)	An error is recovered following the attention error interrupt from the S-ODC.	C4~C6
	(Q code read)	If any Q code is improperly read, reset and retry.	C7~C9
Stop process	Stop	A servo is controlled in response to the user~s operation to stop the disc completely.	F0~FF

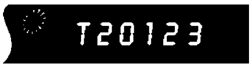
9.7. OVERVIEW OF EACH FUNCTION

9.7.1. CUMULATIVE OPERATION TIME DISPLAY

1. Operation/display



DVD/CD laser operation time
Unit: 120 hours in decimal notation



Spindle motor operation time
Unit: 1230 hours in decimal notation

Key operations are as follows.
Laser operation time .... In STOP mode,
main unit PAUSE+FWD-SKIP+ remote controller [5]
Spindle motor operation time ..... In STOP mode,
main unit PAUSE+FWD-SKIP+ remote controller [6]
To reset the timer, perform the following while displaying the time with above key operation.
Laser operation time .... In STOP mode,
main unit STOP+FWD-SKIP+ remote controller [5]
Spindle motor operation time ..... In STOP mode,
main unit STOP+FWD-SKIP+ remote controller [6]

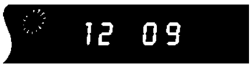
2. How to utilize

Reference information in fault diagnosis of laser or spindle motor system.
Review of faulty point in repeated repair

9.7.2. SERVO PROCESS DISPLAY

1. Operation/display

While the player is in STOP mode, perform the specified key operation to display the servo process number on FL.
When the display does not change from the error indication, press Open/Close key to show the servo process number.
Key operation: In STOP mode,
main unit PAUSE+FWD- SKIP+ remote controller [7]



Number to the left ...
... Process number when halted
Number to the right ...
... Process number in progress

9.8. SALES DEMONSTRATION LOCK FUNCTION

This function prevents discs from being lost when the unit is used for sales demonstrations by disabling the disc eject function.
"LOCK" is displayed on the unit and ordinary operation is disabled.

9.8.1. SETTING

The sales demonstration lock is set by simultaneously pressing STOP button on the player and POWER button on the remote control unit.

9.8.2. CANCELLATION

The lock can be cancelled by the same procedure as used in setting. ("UNLOCK" is displayed on cancellation.
Disconnecting the power cable from power outlet does not cancel the lock.)

9.9. HANDLING AFTER COMPLETING REPAIRS

Use the following procedure after completing repairs.

9.9.1. PRECAUTIONS

Do not disconnect the power plug from the outlet with the tray still open, then close the tray manually.

9.9.2. METHOD

Confirm that the power is turned on:

1. Press the "OPEN/CLOSE" button to close the tray.

2. Press the "POWER" button to turn off the power.

3. Disconnect the power plug from the outlet.

9.10. SERVICE PRECAUTIONS

9.10.1. RECOVERY AFTER THE DVD PLAYER IS REPAIRED

When an FROM or an EEPROM on the decoder PCB has replaced, carry out the recovery disc processing to optimize the drive. Playback the disk to process the recovery automatically.

Note:
This unit requires no initialization process carried out after the traditional DVD players were repaired.
When the recovery measures are taken, the customer setting will return to the factory setting as same as the procedure described in item of "Initialization". Write down the contents of the setting before recovery processing and reset the player.

9.10.2. FIRMWARE VERSION-UP OF THE DVD PLAYER

The firmware of the DVD player may be renewed to improve the quality including operationability and playability to the substandard discs processing to optimize the drive.

Note:
If the AC power supply is shut down during version-up due to a power failure, the version-up is improperly carried out. In such a case, replace the FROM and carry out the version-up again.
The product number of the version-up disc will be noticed when it is supplied.

9.10.3. FIRMWARE VERSION-UP AND RECOVERY WITH DISC

- Recovery
- Firmware updating

Simply run the recovery disc. Then both of the above operations are automatically performed.
Commercially available CD-R can now perform updating and recovery process, making it easier to update the version.
Recovery process: Optimization of player after replacement of FROM and Decoder PCB.
Version updating: Firmware updating for improved operability and performance.

9.10.4. HOW TO USE RECOVERY DISC

9.10.4.1. PERFORMIG RECOVERY

1. Load the recovery disc RFKZD03R005 on to the player and run it.

2. Recovery is performed automatically. When it is finished, a message appears on the screen.

3. Remove the recovery disc.
4. Turn off the power.

9.10.4.2. UPDATING FIRMWARE

1. Load the recovery disc RFKZD03R005
   on to the player and run it.
2. Firmware version of the player is automatically checked.
   Appropriate message appears whenever necessary.
3. Using remote controllers cursor key,
   select whether version updating is to be done or not
   (Selection of Yes/No).
4. a. If Yes is selected, version updating is performed.
   b. If No is selected, only recovery is performed.
5. a. When updating is finished, remove the disc
   according to the message appearing on the screen.
   b. Remove the disc according to the message
   appearing on the screen.
6. Turn off the power.

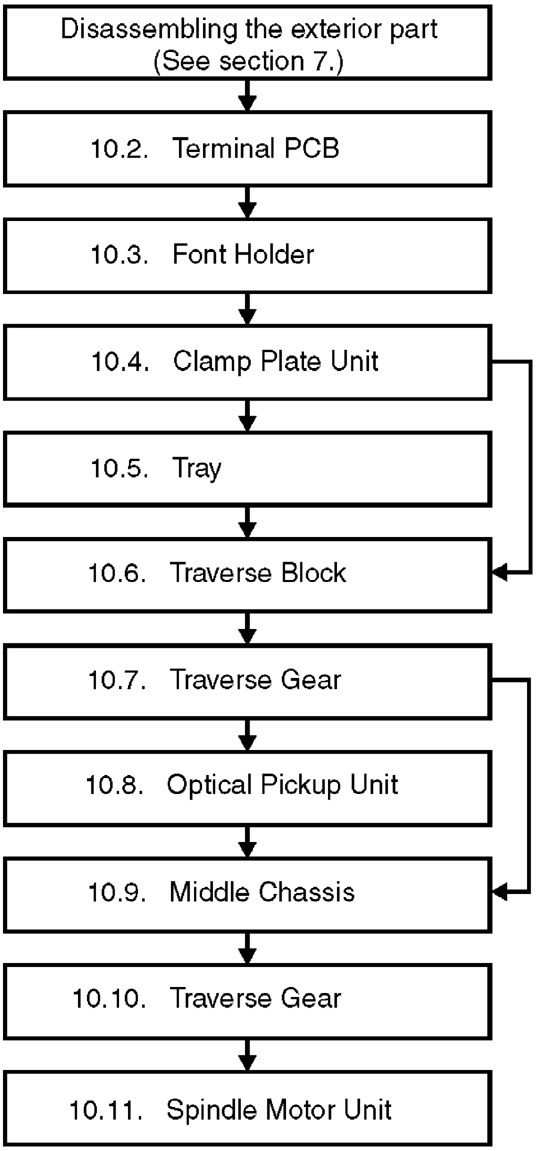
9.11. VCR SELF-DIAGNOSIS RESULT DISPLAY

The "SELF-DIAGNOSIS RESULT DISPLAY & MEMORY
function is built in this VTR.
It means that when the VCR detects undesirable condition,
it can be displayed a “Error code (Two numbers from the right)” with Service Mode 2.
Since the "Error code" is stored in the EEPROM,
it can be displayed although after disconnected the AC leads.
It can be displayed with Service Mode 2.
(If a second error had been detected,
only the most recent error is displayed.)
For more details, refer to the Service Manual
for R4 Mechanism Chassis for EURO model
(MAD0403002C2).

9.12. CAUTION FOR AC MAINS LEAD (NV-VP33EB/EBL)

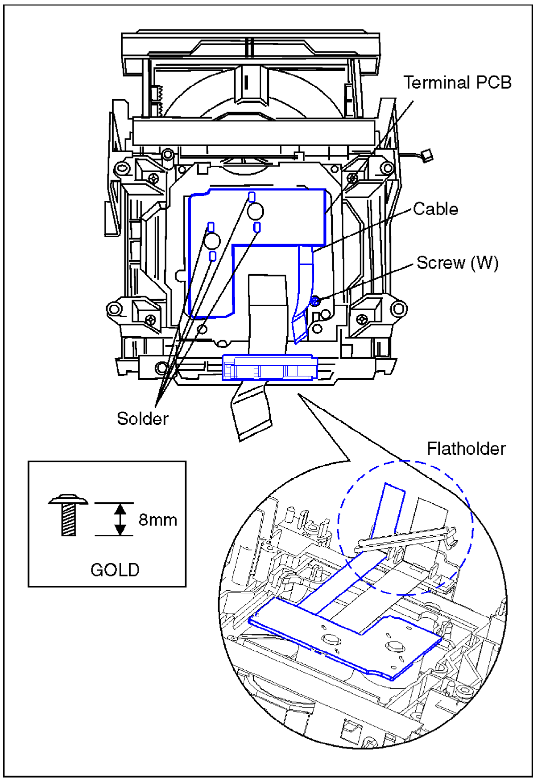
10. ASSEMBLING AND / DISASSEMBLING / THE MECHANISM UNIT

10.1. DISASSEMBLY PROCEDURE


Disassembling the exterior part
(See section 7.)
10.2. Terminal PCB
10.3. Font Holder
10.4. Clamp Plate Unit
10.5. Tray
10.6. Traverse Block
10.7. Traverse Gear
10.8. Optical Pickup Unit
10.9. Middle Chassis
10.10. Traverse Gear
10.11. Spindle Motor Unit

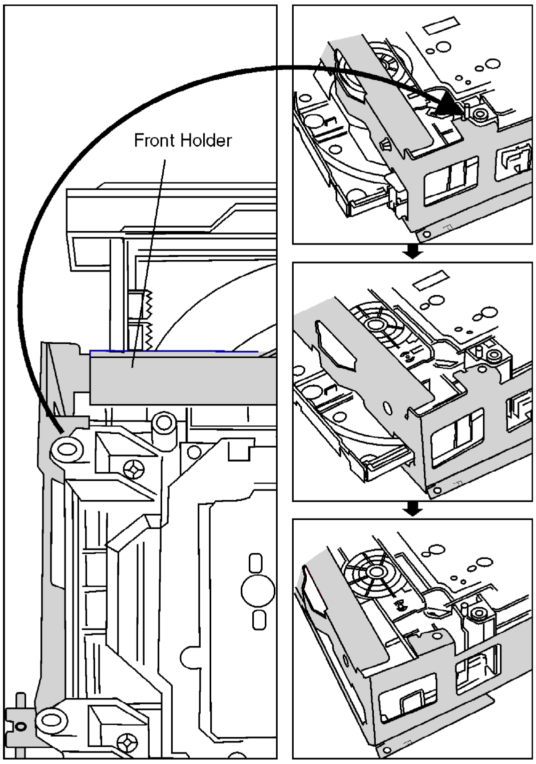
10.2. TERMINAL PCB UNIT

1. **Unscrew the Screw.**
2. **Remove the Solder.**
3. **Remove the Cable.**
4. **Remove the Terminal PCB Unit.**


Terminal PCB
Cable
Screw (W)
Solder
Flatholder
8mm
GOLD

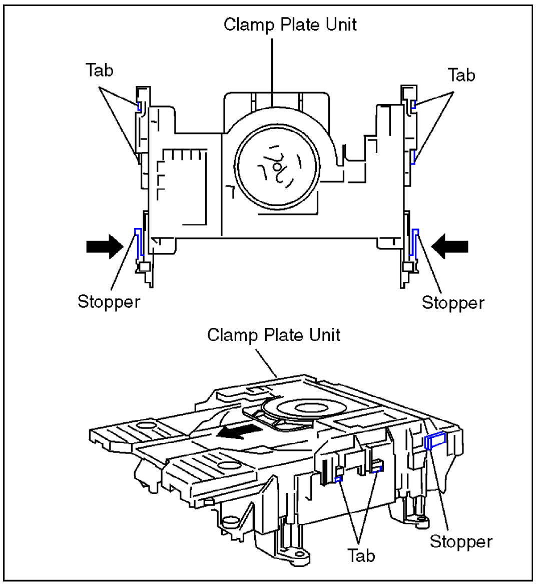
10.3. FRONT HOLDER

1. Remove the Front Holder


Front Holder

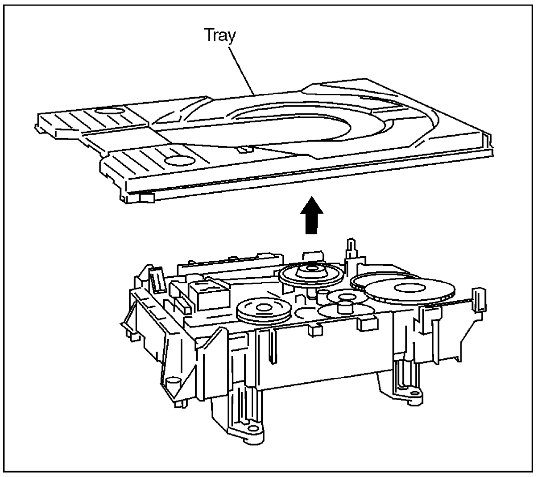
10.4. CLAMP PLATE UNIT

1. **Push the stopper with hand to slide the tabs and remove the clamp plate unit.**


Clamp Plate Unit
Tab
Tab
Stopper
Stopper
Clamp Plate Unit
Tab
Stopper

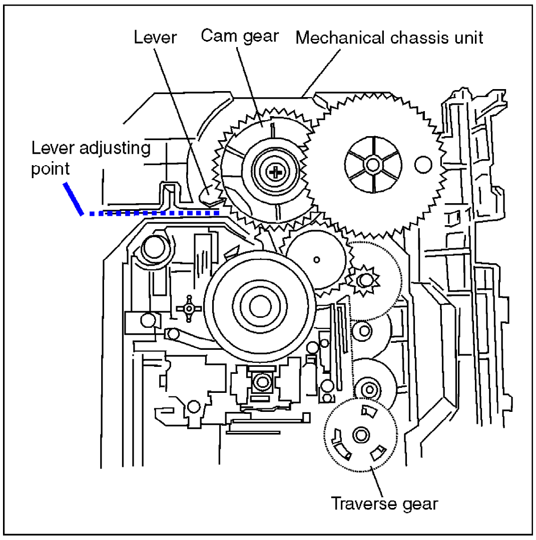
10.5. TRAY

1. **Lift the tray.**

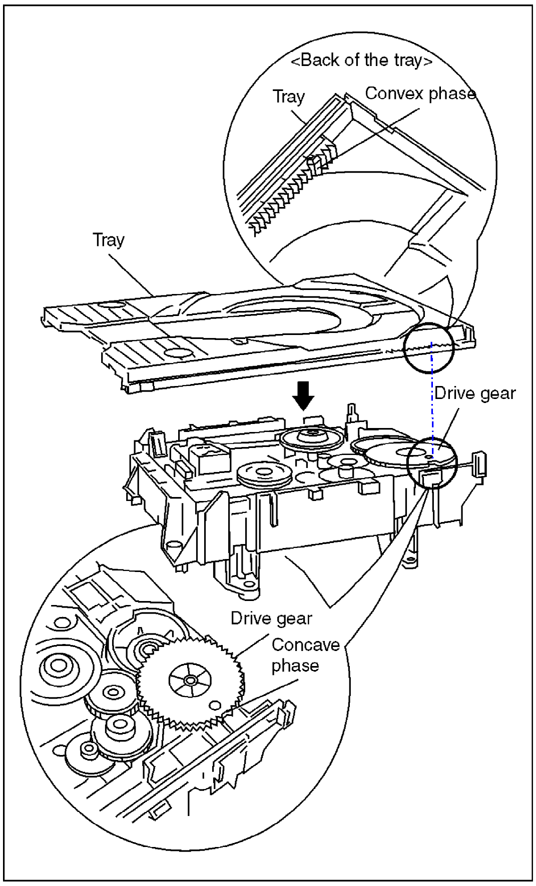


<Precautions in reassembling the tray>
Reassemble the tray so that it is in the backmost position.

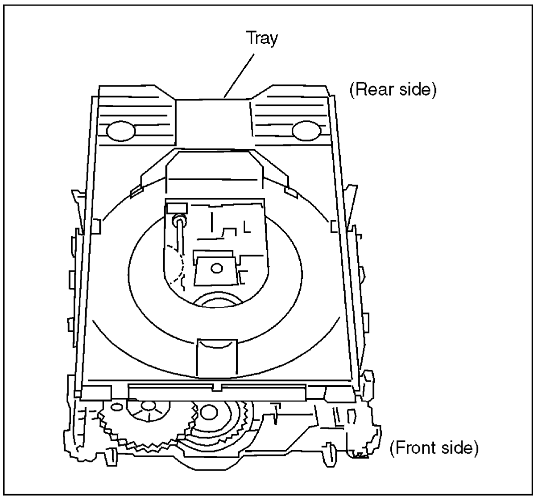
1. **Turn traverse gear until cam gear leaver comes to the lever adjusting position at the end of mechanical chassis unit.**


Lever
Cam gear
Mechanical chassis unit
Lever adjusting point
Traverse gear

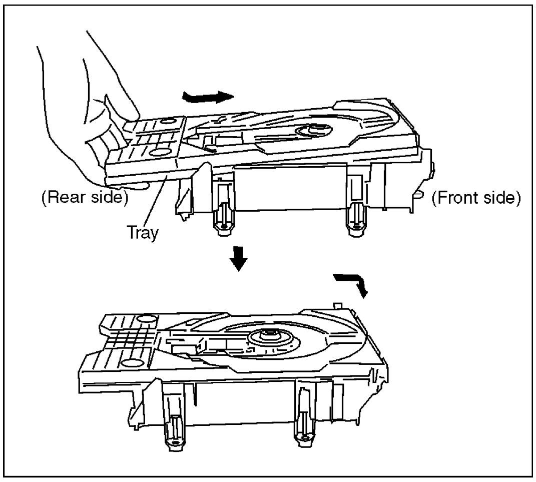
2. **Check the position of convex phase on back of the tray, and that of concave phase on drive gear.**


<Back of the tray>
Tray
Convex phase
Tray
Drive gear
Drive gear
Concave phase

A. Place the tray on the unit from rearward.

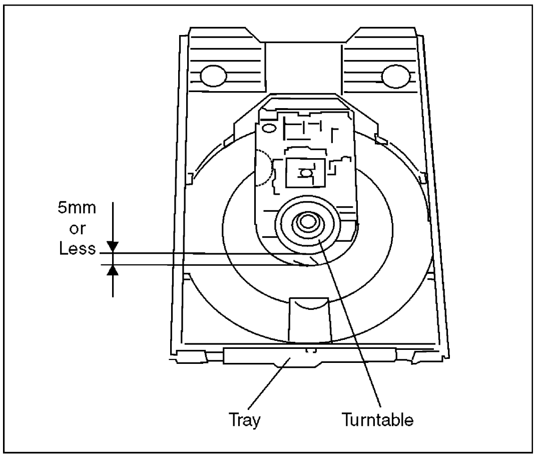

Tray
(Rear side)
(Front side)

B. Inch the tray frontward until convex phase and concave phase mate.


(Rear side)
Tray
(Front side)

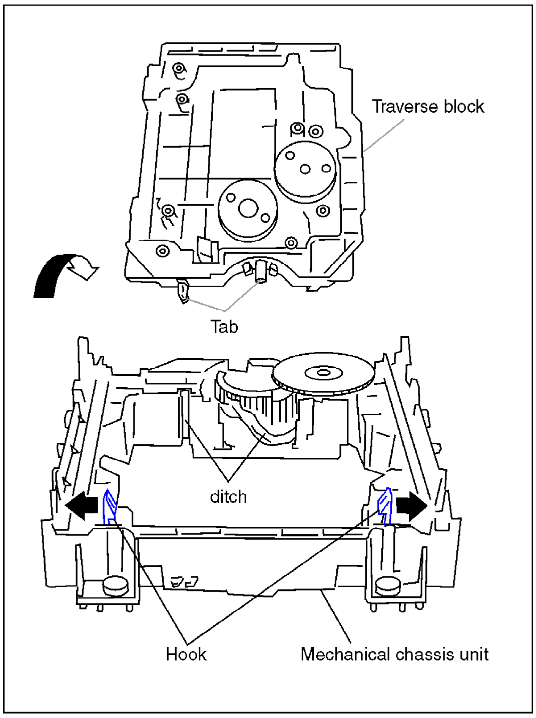
Caution:

Make sure to mate convex phase and concave phase properly, so that the gap between turntable and tray becomes 5mm or less.


5mm
or
Less
Tray
Turntable

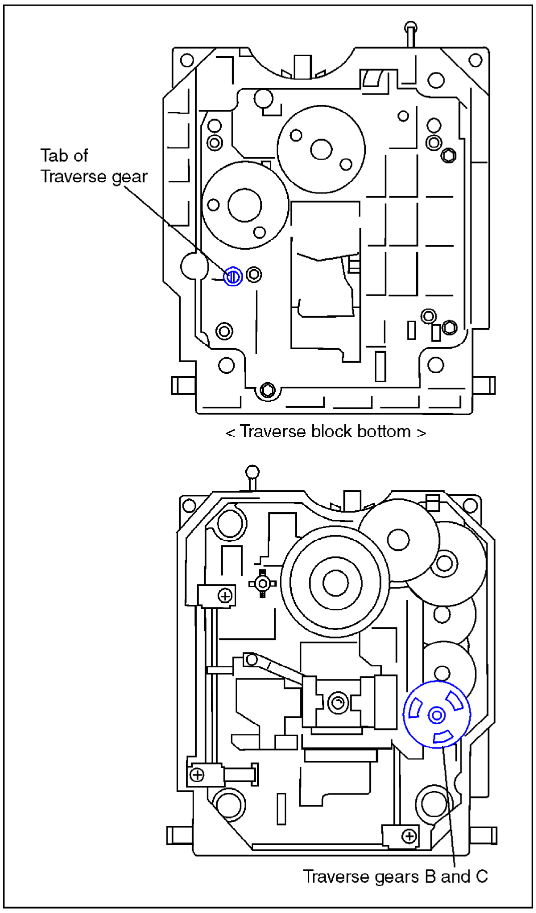
10.6. TRAVERSE BLOCK

1. **Lift the traverse block while spreading the hook of the mechanical chassis unit.**
2. **Disengage the tabs from the holes of the mechanical chassis unit.**


Traverse block
Tab
ditch
Hook
Mechanical chassis unit

10.7. TRAVERSE GEAR

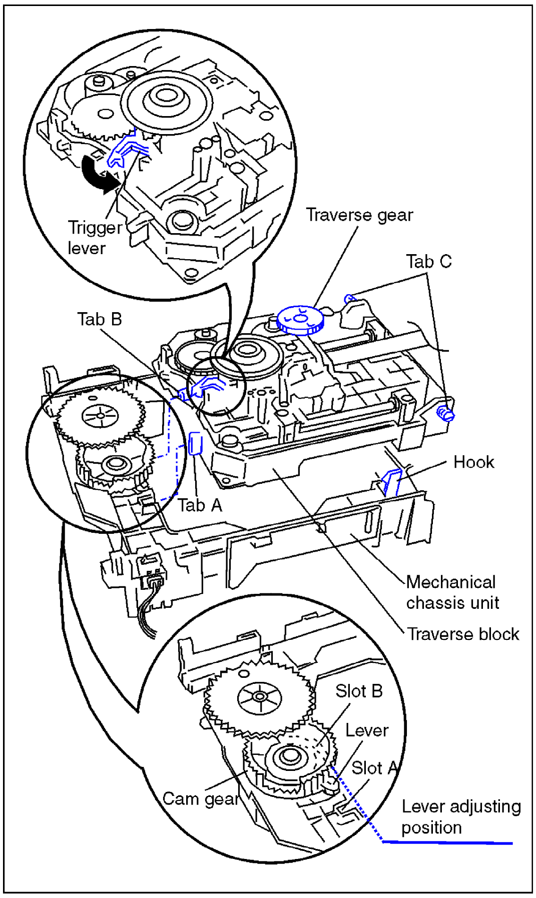
1. **Disengage the tabs from the traverse gear.**
2. **Remove the traverse gears B and C.**


Tab of
Traverse gear
< Traverse block bottom >
Traverse gears B and C

<Precautions in reassembling the traverse block>

● **Take the following precautions when reassembling the traverse block.**

1. **Turn traverse gear on the traverse block to let trigger lever turn rightward (Front view).**
2. **Bring cam gear lever to the lever adjusting position at the end of mechanical chassis unit.**
3. **Put tabs A and B into slots A and B respectively.**
   Place tabs C into hooks to mount the traverse block on mechanical chassis unit (Slot A... Mechanical chassis unit, Slot B... Cam gear).

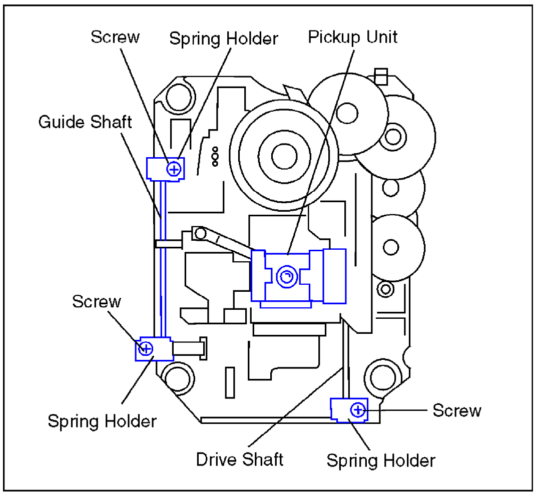

Trigger lever
Traverse gear
Tab C
Tab B
Hook
Tab A
Mechanical chassis unit
Traverse block
Slot B
Lever
Slot A
Cam gear
Lever adjusting position

10.8. OPTICAL PICKUP UNIT

1. Unscrew the screws.

2. Remove the spring holders and the springs.

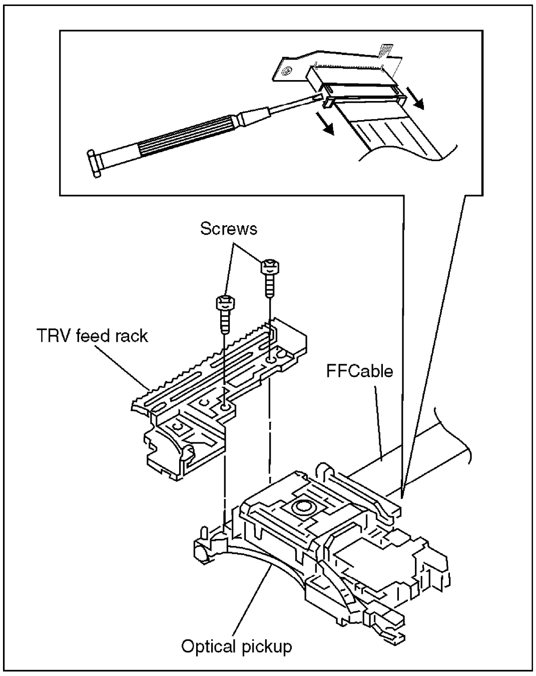
3. Pull out the drive shaft and guide shaft.


Screw
Spring Holder
Pickup Unit
Guide Shaft
Screw
Spring Holder
Drive Shaft
Spring Holder
Screw

10.8.1. DISASSEMBLING THE OPTICAL PICKUP UNIT

1. **Remove the two screws and remove the TRV feed rack.**
2. **Remove the FFC cable.**
3. **Remove the optical pickup.**

Fig. 1



10.8.2. CAUTIONS TO BE TAKEN WHEN REPLACING THE OPTICAL PICKUP

- Replace the optical pickup according to the following procedure.

1. **Install the TRV feed rack on the optical pickup (see Fig. 1).**
2. **Install the Optical Pickup Unit, Spring, Drive shaft, Guide shaft and Spring holder on the Traverse block.**
   Cautions to be taken when assembling the unit: Install the Pickup Unit so that it is located at the rear end of the Guide shaft.
3. **Install the FFCable (see Fig. 1).**

Fig. 2

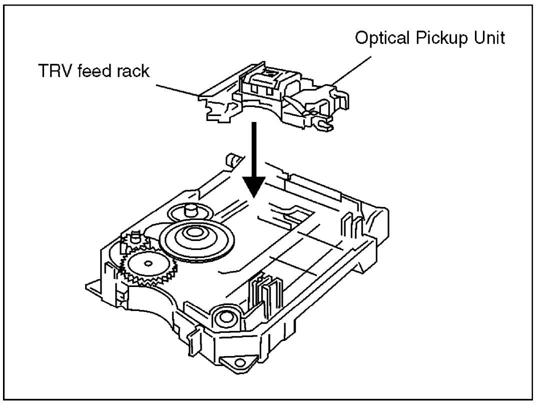
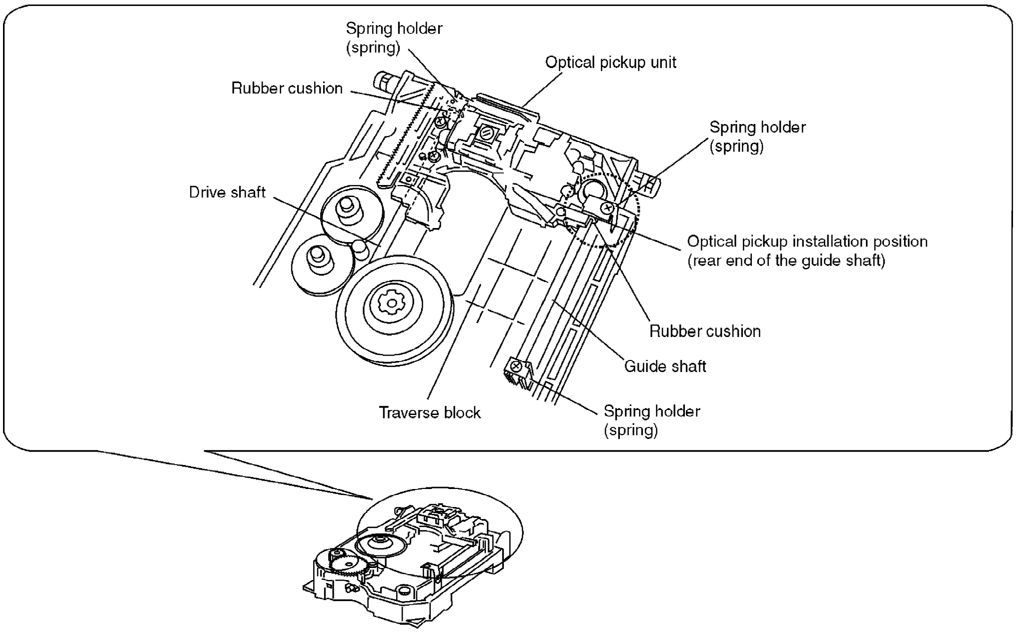

Optical Pickup Unit
TRV feed rack

Fig. 3

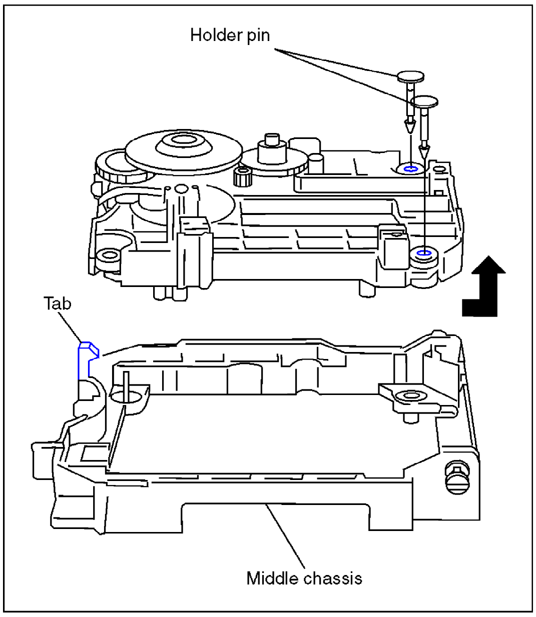

Spring holder (spring)
Optical pickup unit
Rubber cushion
Spring holder (spring)
Drive shaft
Optical pickup installation position (rear end of the guide shaft)
Rubber cushion
Guide shaft
Traverse block
Spring holder (spring)

10.9. DISASSEMBLING THE / MIDDLE CHASSIS

1. Remove the holder pins.

2. Remove the tab.

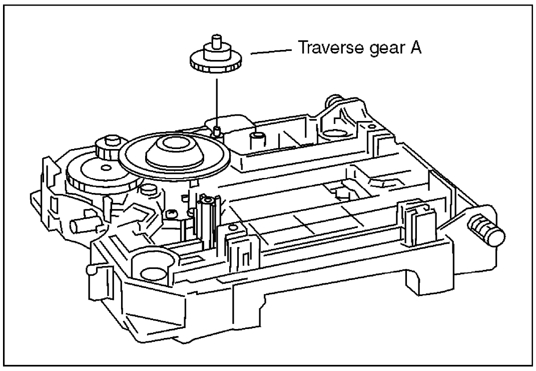
3. It lifts while pulling it in the direction of the arrow.


Holder pin
Tab
Middle chassis

10.10. DISASSEMBLING THE / TRAVERSE

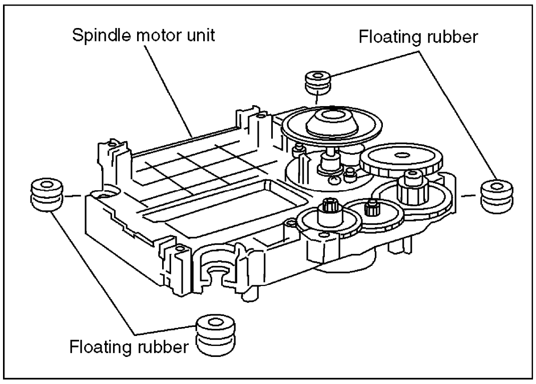
1. Unscrew the screw.

2. Remove the traverse gear A.


Traverse gear A

10.11. DISASSEMBLING THE / SPINDLE MOTOR UNIT /

1. Remove the floating rubbers.


Spindle motor unit
Floating rubber
Floating rubber

11. ADJUSTMENT PROCEDURES

11.1. IMPORTANT POINTS IN ADJUSTMENT

11.1.1. IMPORTANT POINTS IN OPTICAL ADJUSTMENT

- Before starting optical adjustment be sure to take anti-static measures.

- Optical pickup tilt adjustment is needed after replacement of the following components.

1. Optical pickup unit

2. Spindle motor unit

3. Optical pickup peripheral parts (such as rail)

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, make adjustment if there is a noticeable degradation in picture quality. Optical adjustments cannot be made inside the optical pickup. Adjustment is generally unnecessary after replacing the traverse unit.

11.1.2. IMPORTANT POINTS IN ELECTRICAL ADJUSTMENT

- Follow the adjustment procedures described in this Manual.

11.2. STORING AND HANDLING TEST DISCS

- Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.

1. Do not place discs directly onto the workbench, etc., after use.

2. Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.

3. Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.

4. If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

11.3. OPTICAL ADJUSTMENT

11.3.1. OPTICAL PICKUP TILT ADJUSTMENT

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T43 (outer periphery) play	DVDR-S15 or DVDT-S01
Measuring equipment		**Adjustment value**	
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

11.3.1.1. ADJUSTMENT PROCEDURE

1. While pressing PAUSE and OPEN/CLOSE buttons on the main unit, press "5" on the remote control unit.
2. Confirm that "J_xxx_yyy_zz" is shown on the front display.

For your information:
"yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.

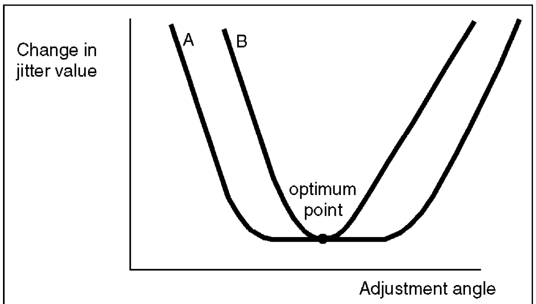
Note:
Jitter value appears on the front display.

3. Play test disc T01 (inner periphery).
4. Adjust tangential adjustment screw so that the jitter value is minimized.
5. Play test disc T43 (outer periphery).
6. Adjust tilt adjustment screw 1 so that the jitter value is minimized.
7. Play test disc T43 (outer periphery).
8. Adjust tilt adjustment screw 2 so that the jitter value is minimized.
9. Repeat adjusting tilt adjustment screws 1 and 2 alternately until the jitter value is minimized.

11.3.1.2. IMPORTANT POINTS

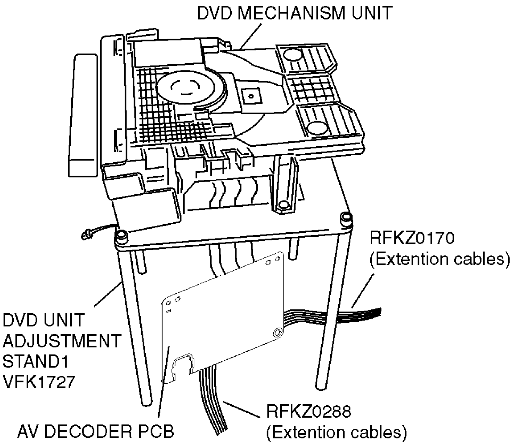
1. Make tangential adjustment first and then make tilt adjustment.
2. Repeat adjusting two or three times to find the optimum point.

3. Finish the procedure with tilt adjustment.

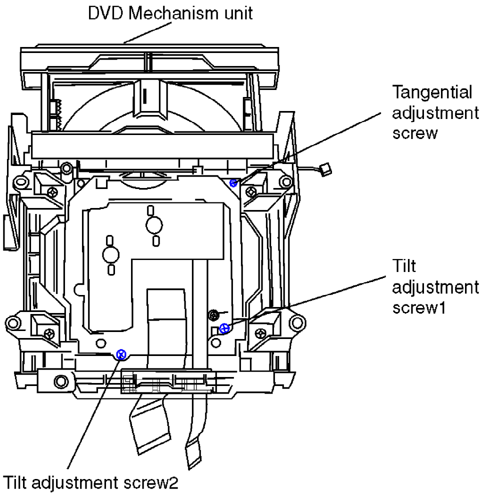


Jitter value depends on the model:

1. If the jitter value changes like B, the optimum point is easy to find.
2. If the jitter value changes like A, set the optimum point near the middle.


DVD MECHANISM UNIT
RFKZ0170
(Extention cables)
DVD UNIT
ADJUSTMENT
STAND1
VFK1727
AV DECODER PCB
RFKZ0288
(Extention cables)

Note:
When adjust Tilt adjustment screw 2, turn the DVD unit slightly so that the Tilt adjustment screw 2 could be adjusted.

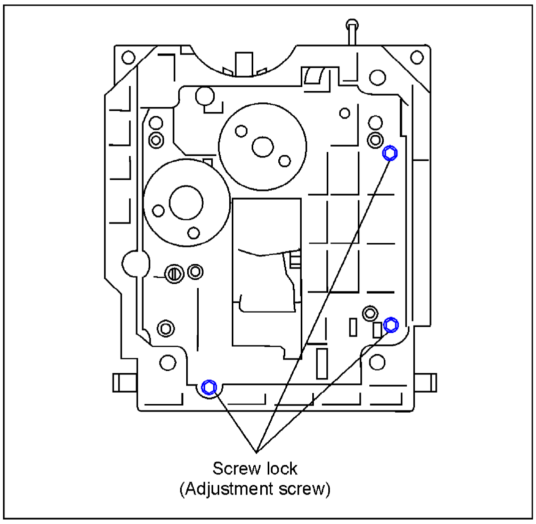

DVD Mechanism unit
Tangential adjustment screw
Tilt adjustment screw1
Tilt adjustment screw2

11.3.1.3. CHECK AFTER ADJUSTMENT

Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

11.3.1.4. PROCEDURE FOR SCREW LOCK

1. **After adjustment, remove top panel, tray, clamper base and traverse unit in this sequence.**
2. **Lay the traverse unit upside down and fix adjustment screw with screw lock.**
3. **After fixing, reassemble traverse unit, clamper base, tray and top panel.**



11.4. VCR ELECTRICAL ADJUSTMENT PROCEDURES

11.4.1. TEST EQUIPMENT

The following equipments are required for Electrical Adjustments.

1. **Dual-Trace Oscilloscope**
    - **Voltage Range: 0.005-5V/div**
    - **Frequency Range: DC-35MHz**
    - **Probes: 10:1 / 1:1**
2. **Frequency Counter**
    - **Frequency Range: 0-10MHz**
    - **Probes: 1:1**
3. **Universal Counter**

4. Digital Volt Meter (D.V.M.)
5. Video Sweep Generator
6. Sinewave Generator
7. Video Pattern Generator
8. Monitor TV
9. DC Power Supply
10. VHS Blank Tape
11. VHS Alignment Tape

    - Parts No.: VFJ8125H3F(PAL)

11.4.2. VCR SETTING

When no indication in the procedure, set each selector as follows.

1. TAPE SPEED: SP
2. CHANNEL: AV1/AV2
   (Set to signal input terminal number)

11.4.3. ADJUSTMENTS

ITEM	TP	ADJ.	MODE	INPUT	TAPE	M. EQ.	SPEC	REMA
PG SHIFTER ADJUSTMENT	---	---	PLAYBACK	---	ALIGNMENT TAPE (PAL)	---	---	Refer to proc PG SHIFTER ADJUSTMEN shown in Fig
VIDEO FREQUENCY RESPONSE ADJUSTMENT	VIDEO OUT	---	SP/LP/EP PLAYBACK (SELF-REC)	VIDEO SWEEP (See Fig. E1)	BLANK TAPE	OSCILLOSCOPE/ VIDEO SWEEP GENERAT OR	SP: 0+-1 (dB) (90~110%) LP: 0+-1 (dB) (90~110%) EP: 0+-3 (dB) (70~140%) (See Fig. E2)	Refer to the procedure o VIDEO FREQ RESPONCE ADJUSTMEN as shown in

CONDITION:
BURST SIGNAL OFF / 75 ohm
TERMINATED

Fig. E1

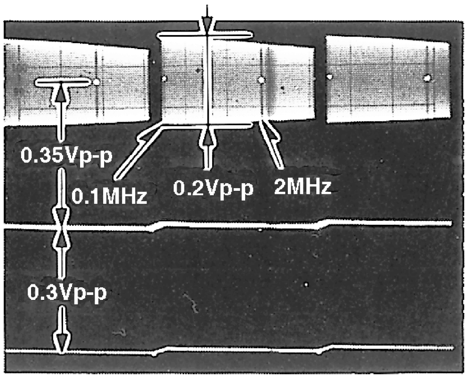
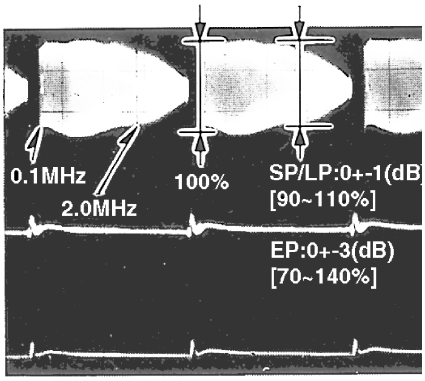
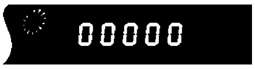
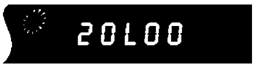
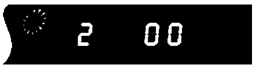
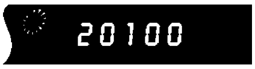
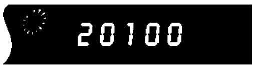


Fig. E2



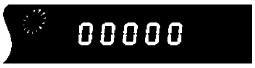
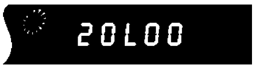
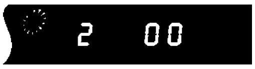
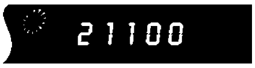
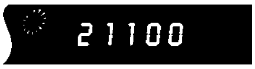
11.4.4. PG SHIFTER ADJUSTMENT / (AUTOMATIC)

Fig. E3

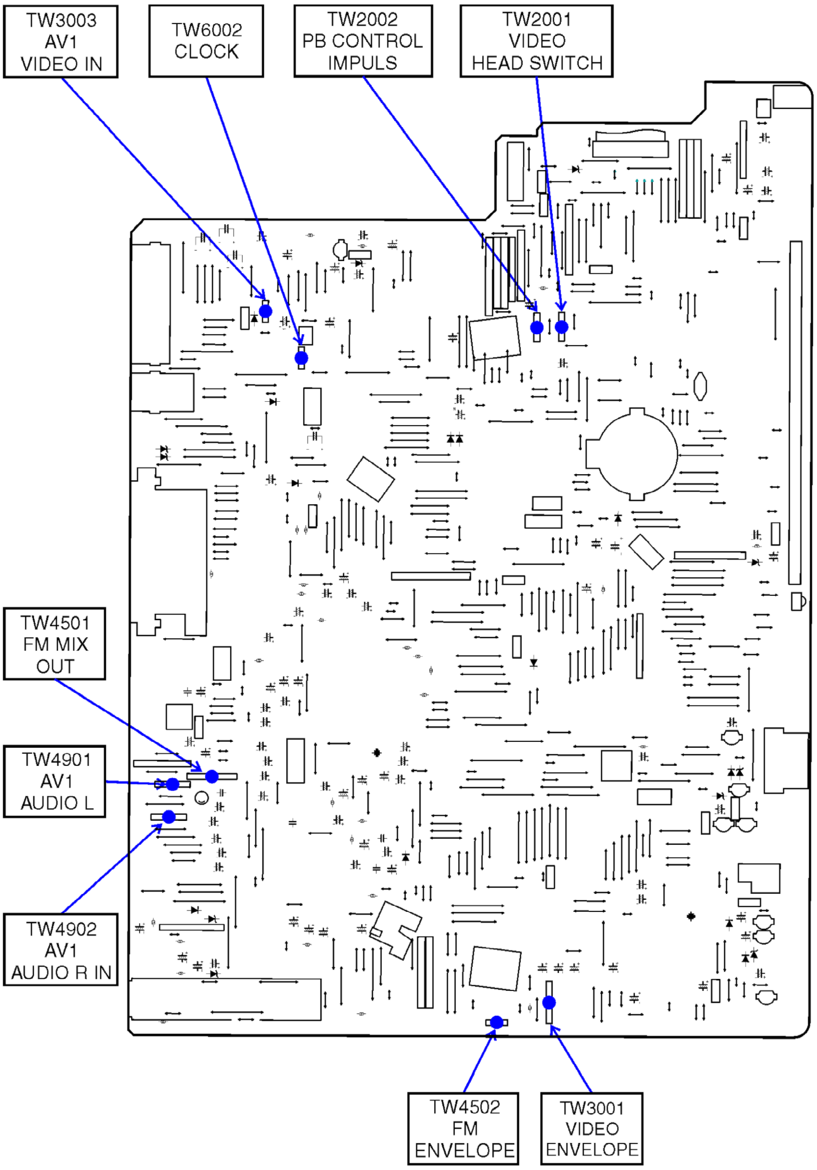
PROCEDURES	FIP DISPLAY
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP key once.	
Insert the Alignment cassette tape. (PAL:VFJ8125H3F)	
When the sequence of the automatical adjustment has been terminated, the following action has been made. *SUCCEED: The cassette tape is ejected. *ERROR : The "F2"is displayed on the FIP. (Check the Servo/Syscon circuit and Cylinder unit.)	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

11.4.5. VIDEO FREQUENCY RESPONSE ADJUSTMENT

Fig. E4

PROCEDURES	FIP DISPLAY
Input the Video sweep signal. (See Fig.E1)	
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP key until "11" is displayed on FIP.	
Insert the Self-recorded tape and playback it. (SP/LP/EP mode)	
Connect the Oscilloscope to: *CH1....Video Out (TW3002).	
Press the "4" key on the remote controller. (Confirm that TW6002 becomes high(5V)).	
Adjust the Frequency response by pressing the "2"(increase) and/or "8"(decrease) key on the Remote Controller. (See Fig.E2)	
Store the Adjusted value by pressing the "5" key on the Remote Controller.	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

11.4.6. LOCATION OF TEST POINTS & CONTROLS (MAIN PCB)


TW3003
AV1
VIDEO IN
TW6002
CLOCK
TW2002
PB CONTROL
IMPULS
TW2001
VIDEO
HEAD SWITCH
TW4501
FM MIX
OUT
TW4901
AV1
AUDIO L
TW4902
AV1
AUDIO R IN
TW4502
FM
ENVELOPE
TW3001
VIDEO
ENVELOPE

12. ABBREVIATIONS

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMPOUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCKSELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIPSELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT

INITIAL/LOGO		ABBREVIATIONS
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATAOUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/ 40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE

INITIAL/LOGO		ABBREVIATIONS
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORYSERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVEA
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECTCLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUBCODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAM DATAVALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK

INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSSSIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLYVOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER

INITIAL/LOGO		ABBREVIATIONS
X	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPTREQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIPSELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

13. INPUT / OUTPUT CHART

13.1. INPUT / OUTPUT CHART FOR IC6001

13.2. TRUTH TABLE (EC/EP MODEL)

13.3. TRUTH TABLE (EB/EBL MODEL)

14. WAVEFORM TABLE

14.1. WAVEFORM

15. VOLTAGE CHART

16. INTERCONNECTION DIAGRAM

17. BLOCK DIAGRAM

17.1. POWER SUPPLY BLOCK DIAGRAM

17.2. VCR LUMINANCE & CHROMINANCE BLOCK DIAGRAM

17.3. VCR AUDIO BLOCK DIAGRAM

17.4. SYSCON & SERVO BLOCK DIAGRAM

17.5. DVD VIDEO BLOCK DIAGRAM

17.6. DVD OVERALL BLOCK DIAGRAM

17.7. DVD SERVO BLOCK DIAGRAM

17.8. DVD AUDIO BLOCK DIAGRAM

18. SCHEMATIC DIAGRAM

18.1. POWER PCB

18.2. MAIN PCB - AUDIO/VIDEO

18.3. MAIN PCB - I/O SECTION

18.4. MAIN PCB - SYSCON & SERVO

18.5. MAIN PCB - SYSCON & SERVO (ONLY REPD0024x)

18.6. AV DECODER PCB

18.7. FRONT PANEL PCB

18.8. TERMINAL PCB

19. PRINTED CIRCUIT BOARD

19.1. MAIN PCB (COMPONENT SIDE)

19.2. MAIN PCB (SOLDER SIDE)

19.3. MAIN PCB (COMPONENT SIDE - ONLY REPD0024x)

19.4. MAIN PCB (SOLDER SIDE - ONLY REPD0024x)

19.5. DECODER PCB (COMPONENT SIDE)

19.6. DECODER PCB (SOLDER SIDE)

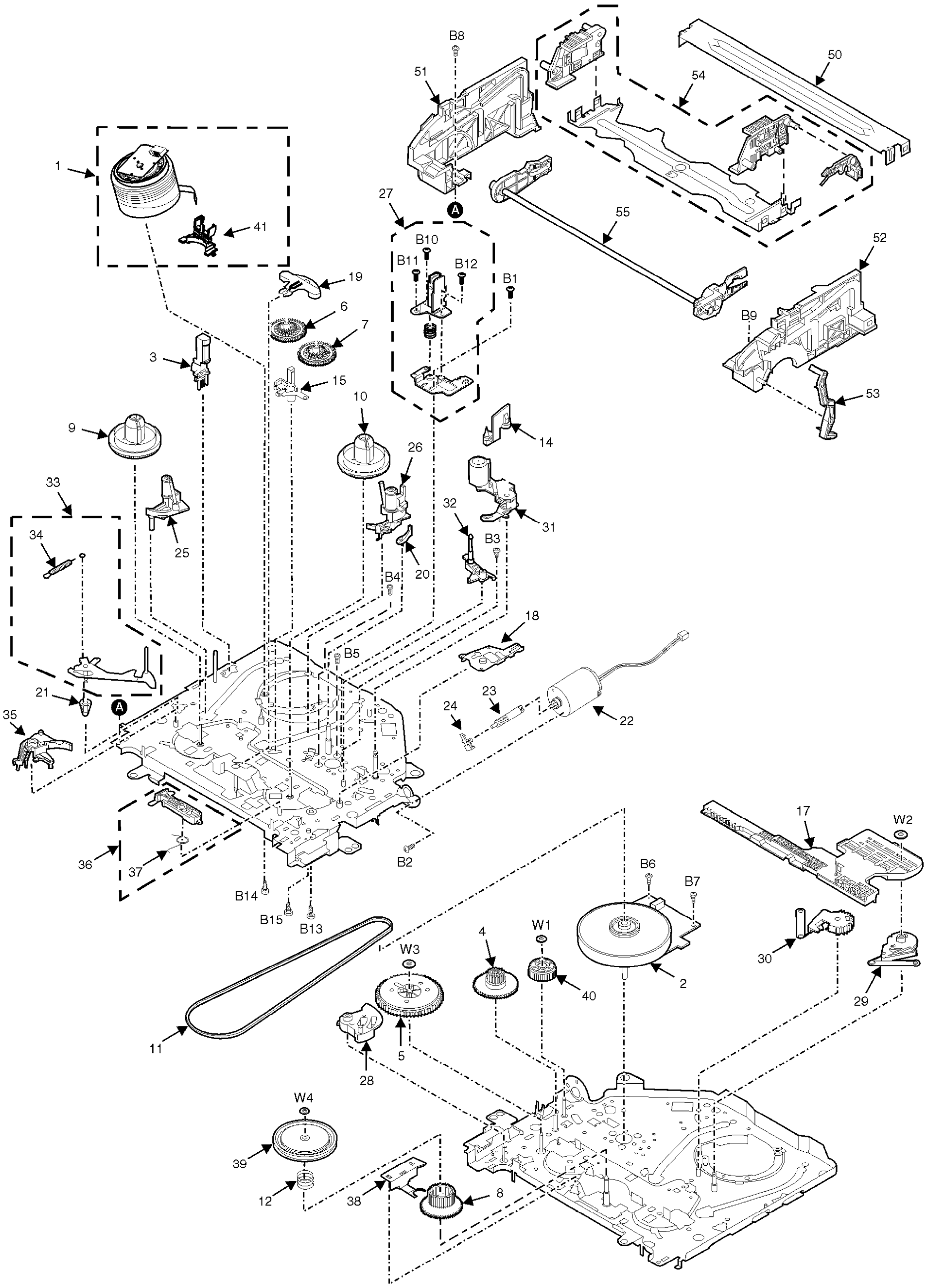
19.7. POWER PCB

19.8. FRONT PCB

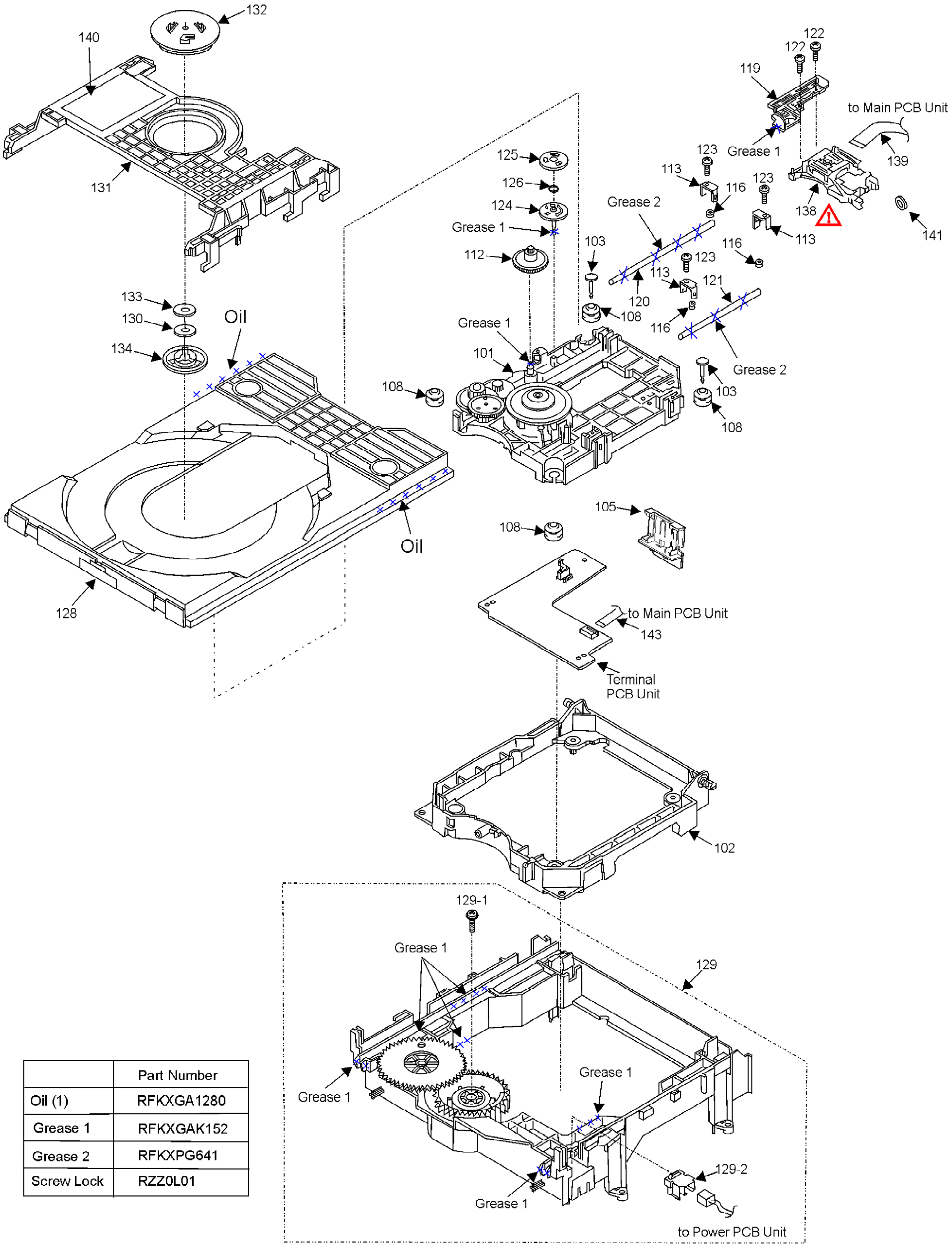
19.9. TERMINAL PCB

20. EXPLODED VIEWS

20.1. VCR CHASSIS PARTS SECTION

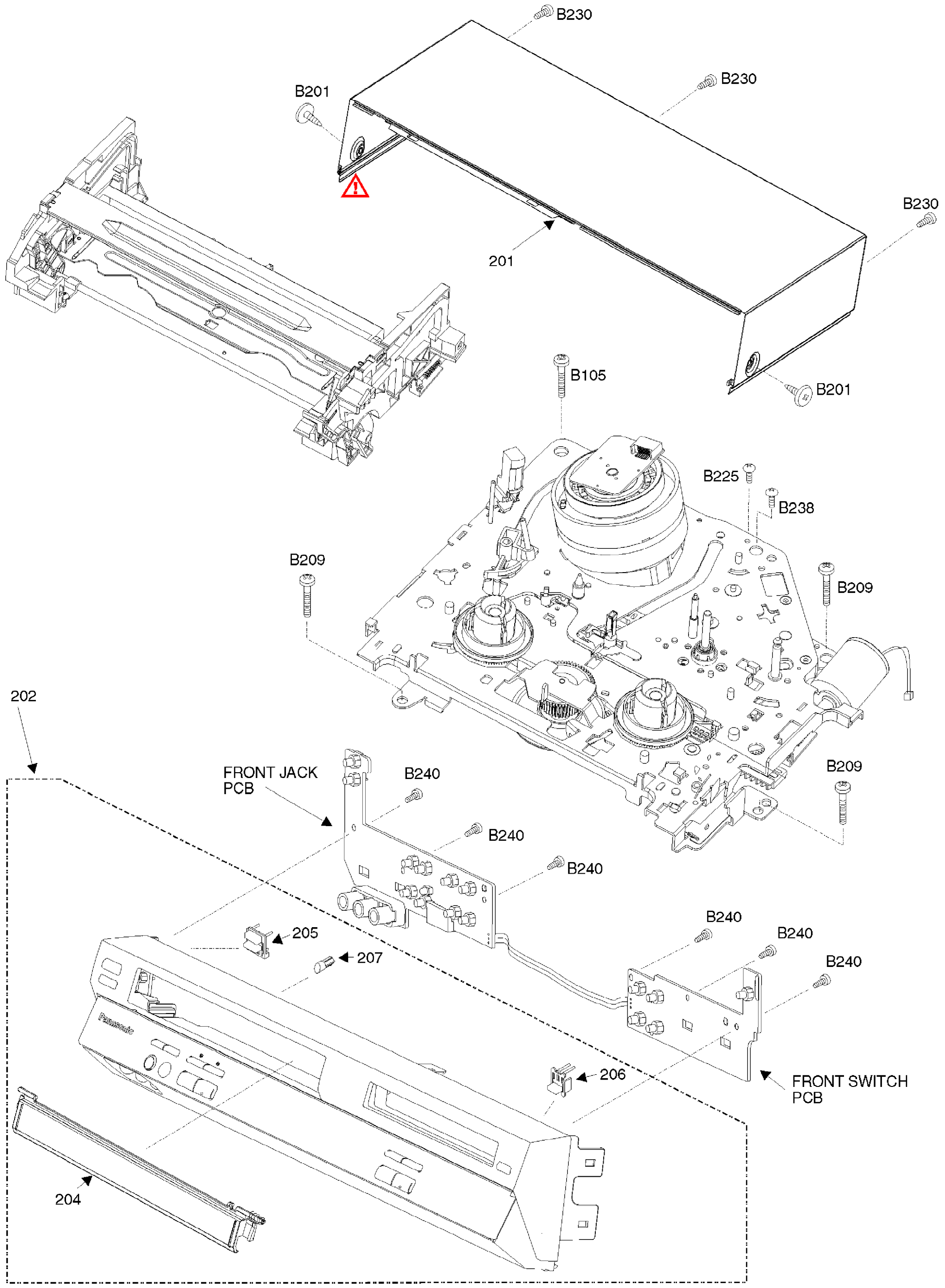

B8
50
51
54
1
27
A
55
41
B10
B11
B12
B1
52
19
6
7
B9
3
15
53
10
9
14
26
33
32
31
34
B3
25
20
B4
18
B5
21
23
35
A
24
22
17
W2
36
37
B2
B6
B7
B14
B15
B13
W1
4
30
W3
2
40
29
11
5
28
W4
39
12
38
8

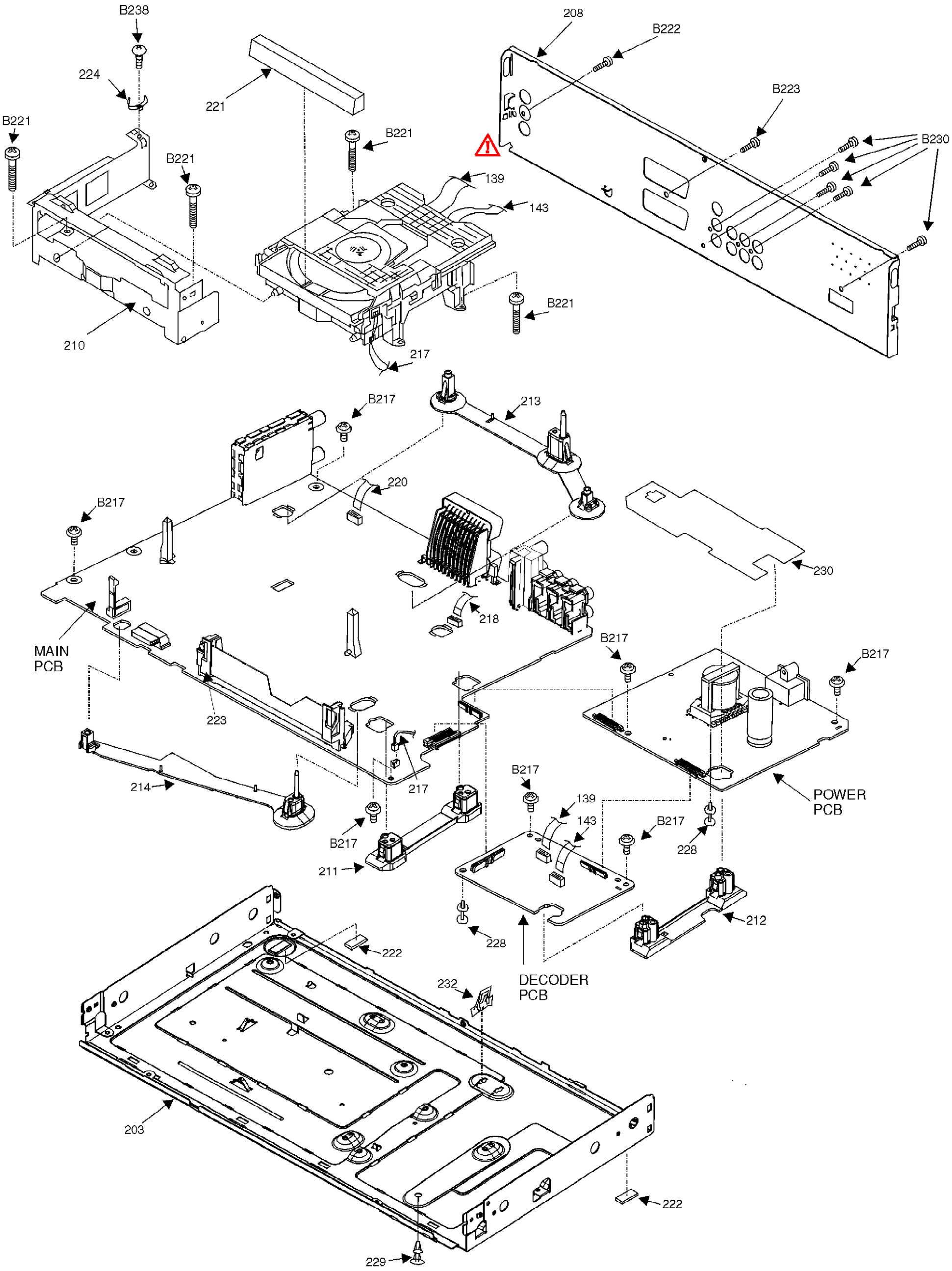
20.2. DVD CHASSIS PARTS SECTION


132
140
131
122
122
119
to Main PCB Unit
139
123
Grease 1
113
123
116
138
141
113
Grease 2
125
126
124
Grease 1
112
103
123
113
116
120
108
121
116
133
130
Oil
134
Grease 1
101
108
Grease 2
103
108
Oil
105
108
128
to Main PCB Unit
143
Terminal
PCB Unit
102
129-1
Grease 1
129
Grease 1
Grease 1
129-2
Grease 1
to Power PCB Unit

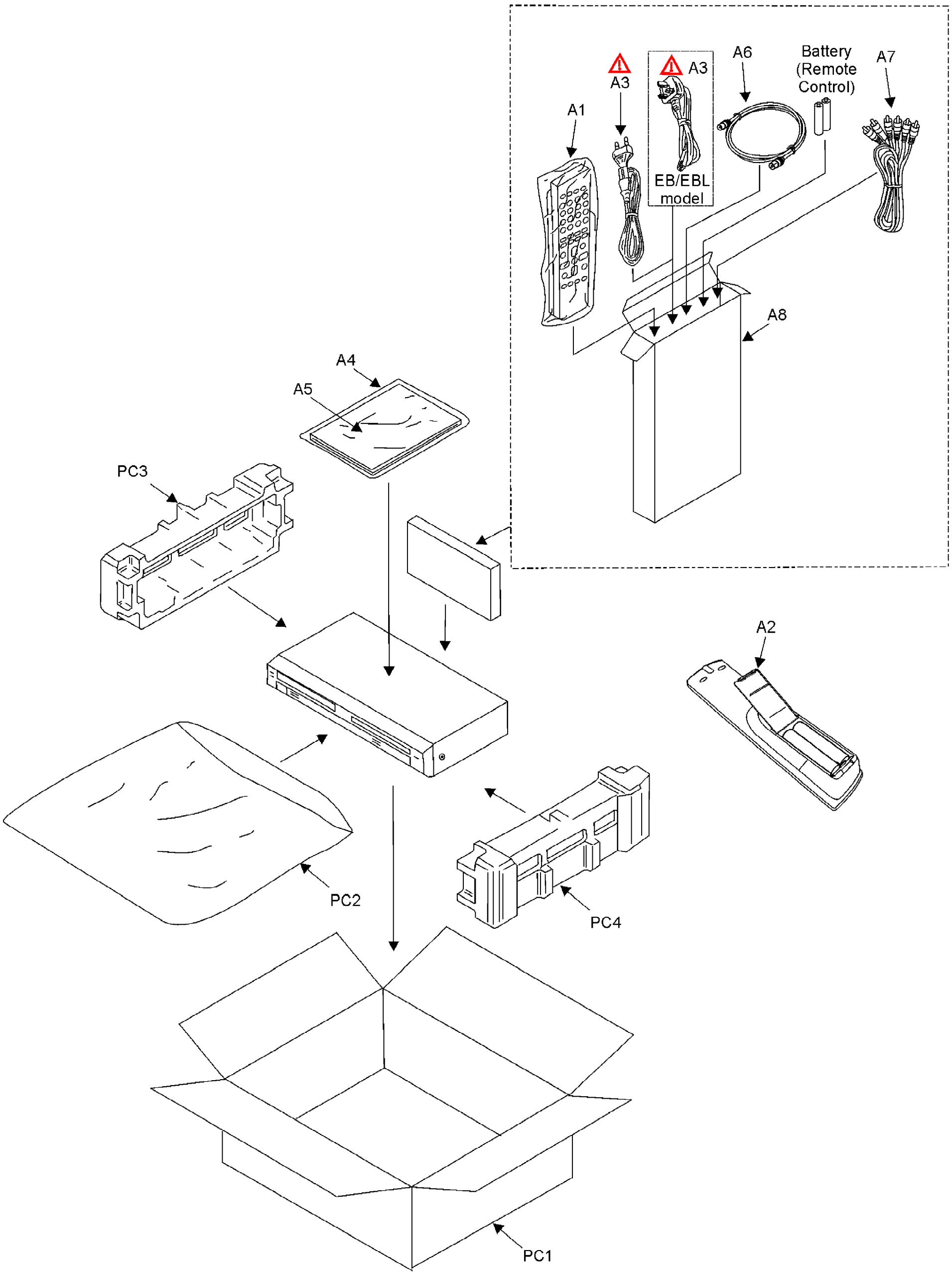
	Part Number
Oil (1)	RFKXGA1280
Grease 1	RFKXGAK152
Grease 2	RFKXPG641
Screw Lock	RZZ0L01

20.3. CASING PARTS SECTION


B230
B201
B230
B230
201
B105
B201
B225
B238
B209
B209
202
FRONT JACK
PCB
B240
B209
B240
B240
B240
205
B240
207
B240
206
FRONT SWITCH
PCB
204


B238
208
B222
224
221
B223
B221
B221
B221
B230
139
143
B221
210
217
B217
213
220
B217
230
MAIN PCB
218
B217
B217
223
B217
139
143
POWER PCB
214
217
B217
228
B217
211
212
228
222
DECODER PCB
232
203
222
229

20.4. PACKING PARTS SECTION



A3
A3
A6
Battery (Remote Control)
A7
A1
EB/EBL model
A8
A4
A5
PC3
A2
PC2
PC4
PC1

21. REPLACEMENT PARTS LIST

Notes:

***Important safety notice:**

Components identified by ⚠; mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fireretardant (resistors), high-quality sound (capacitors), lownoise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.
Do not use any part number shown on the Schematic Diagramm for ordering. When you order a part, please refer only to the PARTS LIST.
***Warning:**
This product uses a laser diode.
Refer to caution statements.
***The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.**
***PCB's are identified by " ■ " character.**

Note: The *1, *2, *3, *4, *5, *6, *7, *8, *9, *10, *11, *12 in the Remarks column shows the models as follows:

***1 = NV-VP33EP-S**
***2 = NV-VP33EG-S**
***3 = NV-VP33EG-K**
***4 = NV-VP33EC-S**
***5 = NV-VP33EC-K**
***6 = NV-VP33EB-S**
***7 = NV-VP33EBL-S**
***8 = NV-VP28EC-S**
***9 = NV-VP28EG-S**
***10 = NV-VP23EP-S**
***11 = NV-VP23EC-S**
***12 = NV-VP23EG-S**
No indication = all models

21.1. VIDEO MECHA CHASSIS UNIT

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEG1642-DKIT	RDD CYLINDER	1	
2	VEM0750	CAPSTAN UNIT	1	
3	L1AZ00000004	FE HEAD UNIT	1	
4	VDG1510	INTERMEDIATE GEAR	1	
5	VDG1511-4	MAIN CAM GEAR	1	
6	VDG1512	IDLER GEAR	1	
7	VDG1512	IDLER GEAR	1	
8	VDG1514-1	CHANGE GEAR	1	
9	VDR0372	REEL TABLE	1	
10	VDR0372	REEL TABLE	1	
11	VDV0391-2	CAPSTAN BELT	1	
12	VMB3550	CHANGE GEAR SPRING	1	
14	VMD4252	OPENER PIECE	1	⚠
15	VMD4253	LED PRISM	1	
17	VML3624-1	MAIN LEVER	1	
18	VML3626-1	PINCH CHARGE ARM	1	
19	VML3632	IDLER ARM	1	
20	VMX3092	P4 CAP	1	
21	VDB1431	TENSION ARM BOSH	1	
22	VEM0796	LOADING MOTOR UNIT	1	
23	VDG1637	WORM GEAR	1	
24	VMD4987	WORM BEARING	1	
25	VXA7105-2	SUPPLY SHAFT HOLDER UNIT	1	
26	VXA7106-2	TAKE UP SHAFT HOLDER UNIT	1	
27	L1AE00000036	AC HEAD UNIT	1	
28	VXA7311	SECTOR GEAR UNIT	1	
29	VXL3107	SUPPLY LOADING ARM UNIT	1	
30	VXL3108	TAKE UP LOADING ARM UNIT	1	
31	VXL3109-4	PINCH ARM UNIT	1	
32	VXL3110	P5 ARM UNIT	1	
33	VXL3111-1	TENSION ARM UNIT	1	
34	VMB3547-3	TENSION SPRING	1	
35	VXL3112	SUPPLY BRAKE ARM UNIT	1	
36	VXL3113	TAKE UP BRAKE ARM UNIT	1	
37	VMB3548-2	TAKE UP BRAKE SPRING	1	
38	VXL3124-2	CHANGE LEVER UNIT	1	
39	VXP2133-1	CENTRE CLUTCH UNIT	1	
40	VXP2168	TORQUE CLUTCH UNIT	1	
41	VMD4983	FPC HOLDER	1	
50	VMA0L25	TOP PLATE	1	
51	VMD4255-4	SIDE PLATE (L)	1	
52	VMD4254-4	SIDE PLATE (R) UNIT	1	
53	VML3706-1	OPENER LEVER	1	
54	VXA7110-3	CASSETTE HOLDER UNIT	1	
55	VXL3160	MAIN SHAFT UNIT	1	
B1	VHD1044	SCREW	1	
B2	XSN3+35	SCREW	1	
B3	XTN26+7J	SCREW	1	
B4	XTN26+7J	SCREW	1	
B5	XTN26+7J	SCREW	1	
B6	XTV26+5F	SCREW	1	
B7	XTV26+5F	SCREW	1	
B8	XTV26+8FR	SCREW	1	
B9	XTV26+8FR	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B10	VHD1066	SCREW	1	
B11	VHD1066	SCREW	1	
B12	VHD1185	SCREW	1	
B13	VHD1095	SCREW	1	
B14	VHD1117	SCREW	1	
B15	VHD1117	SCREW	1	
W1	VMX2208	WASHER	1	
W2	VMX3196	WASHER	1	
W3	VMX2699	WASHER	1	
W4	VMX3196	WASHER	1	

21.2. DVD MECHA CHASSIS UNIT

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
101	RXQ1241	TRV MOTOR UNIT	1	
102	RMR1654-K	MIDDLE CHASSIS	1	
103	RMS0712-1	FIXED PIN	2	
105	RMN0771	FFC HOLDER	1	
108	RMG0545-A1	FLOATING RUBBER	4	
112	RDG0499	TRV GEAR(A)	1	
113	RMC0415	ADJUST SP. HOLDER(A)	3	
116	RMEC0320	ADJUST SPRING	3	
119	RMM0260	TRV DRIVE RACK	1	
120	RMSC0710	DRIVE SHAFT	1	
121	RMSC0711	GUIDE SHAFT	1	
122	RHD17045	SCREW	2	
123	VHD1224-C	SCREW	3	
124	RDG0500	TRV GEAR(B)	1	
125	RDG0501	TRV GEAR(C)	1	
126	RMEC0319	TRV GEAR SPRING	1	
128	RGQ0280-K4	TRAY	1	
129	RXQ0748	MECHA CHASSIS UNIT	1	
129-1	XTW3+12S	SCREW	1	
129-2	KDF111E00093	OPEN SW	1	
130	JSMC0048	MAGNET HOLDER	1	
131	RMR1445-K	CLAMP PLATE	1	
132	RMR1447-X	MAGNET HOLDER	1	
133	XWG6FFY	WASHER	1	
134	RMR1446-X	CLAMPER	1	
138	RAF3113A-C	OPU(4.16H)	1	⚠
139	REZ1616-2	INTERFACE FFC 26P	1	
140	RQLCA0141	LASER CAUTION LABEL	1	⚠
141	RMG0561-T	CUSHION RUBBER	1	
143	REZ1615	MOTOR DRIVE FFC	1	

21.3. CASING PARTS

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
201	TOP PANEL VP31ECS	VGM2029-1	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
201	TOP PANEL	VGM2079-1	1	*3,*5
202	FRONT PANEL	RYPD0021A-S	1	*1
202	FRONT PANEL	RYPD0018A-S	1	*2
202	FRONT PANEL	RYPD0018A-K	1	*3
202	FRONT PANEL	RYPD0019A-S	1	*4
202	FRONT PANEL	RYPD0019A-K	1	*5
202	FRONT PANEL	RYPD0020A-S	1	*6,*7
202	FRONT PANEL	RYPD0024A-S	1	*12
202	FRONT PANEL	RYPD0025A-S	1	*11
202	FRONT PANEL	RYPD0027A-S	1	*10
202	FRONT PANEL	RYPD0022A-S	1	*9
202	FRONT PANEL	RYPD0023A-S	1	*8
203	BOTTOM CHASSIS	RMKD0005	1	
204	BLINDER PANEL	RGKD0013-S	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
204	BLINDER PANEL	RGKD0013-K	1	*3,*5
205	POWER BUTTON	RGUD0012-S	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
205	POWER BUTTON	RGUD0012-K	1	*3,*5
206	DVD OC BUTTON	RGUD0013-S	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
206	DVD OC BUTTON	RGUD0013-K	1	*3,*5
207	TIMER REC. CAP	RGZD0001-Q	1	
208	REAR PANEL	RGRD0007A-A	1	*1,*2,*3,*4,*5
208	REAR PANEL	RGRD0007A-B	1	*6,*7
208	REAR PANEL	RGRD0007A-D	1	*10,*11, *12
208	REAR PANEL	RGRD0007A-C	1	*8,*9
210	FRONT ANGLE	VMP7683	1	
211	DVD SPACER(L)	RMRD0002	1	
212	DVD SPACER (R)	RMRD0001	1	
213	MECHA SPACER(R)	VMX3229	1	
214	MECHA SPACER(F)	VMX3398	1	
217	WIRE CABLE 2PIN	REXD0001	1	
218	FFC (7P) (CYLINDER)	REZD0012	1	
220	FFC (6P AC-HEAD)	REZD0016	1	
221	TRAY ORNAMENT	RGKD0012-S	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
221	TRAY ORNAMENT	RGKD0012-K	1	*3,*5
222	FOOT	VKA0364	2	
223	FL HOLDER	RMND0005	1	
224	EARTH SPRING (T)	VMC1534	2	
228	PCB SUPPORT (POW)	RMXD0005	1	
229	PCB SPACER (MDL)	RMXD0004	1	
230	BARRIER(U)	RMZD0002	1	
232	PCB SPACER (POW)	RMXD0003	1	
B105	SCREW(R4MECH L)	VHD1452-2	1	
B201	SCREW	VHD1094	2	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
B201	SCREW	VHD1041-1	2	*3,*5
B209	SCREW(R4MECH S)	VHD1453-2	3	
B217	SCREW (DECODER)	RHD30090-1	7	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
B221	SCREW (DVD)	VHD1770	4	
B222	SCREW (TUNER)	XSN3+4FJK	1	
B223	SCREW (SCART)	XTB4+10GFJK	1	
B225	SCREW	XTV26+6FFJ	1	
B230	SCREW	VHD0690-1	5	
B230	SCREW	VHD0690-1	3	
B238	SCREW (MECHA)	XTW3+10PN	1	
B239	SCREW (SPRING)	XTV26+6FFJ	1	
B240	SCREW (FRONT PCB)	RHD26046	6	

21.4. PACKING PARTS

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
PC1	PACKING CASE	RPGD0022-1	1	*1,*2,*4,*6,*7,*8,*9,*10, *11,*12
PC1	PACKING CASE	RPGD0023-1	1	*3,*5
PC2	MIRAMAT BAG	RPFD0004	1	
PC3	CUSHION L	RPND0007A	1	
PC4	CUSHION R	RPND0007B	1	
A1	REMOTE	EUR7720X50	1	*1,*2,*3,*4,*5,*8,*9
A1	REMOTE	EUR7720X60	1	*6,*7
A1	REMOTE	EUR7720X70	1	*10,*11, *12
A2	BATTERY COVER	UR77EC2003	1	
A3	POWERCORD	RJA0043-1C	1	⚠ *1,*2,*3,*4,*5,*8,*9,*10, *11,*12
A3	POWERCORD	RJA0044-3C	1	⚠ *6,*7
A4	PE-BAG	RPFD0001	1	*1,*2,*3,*4,*5,*8,*9,*10, *11,*12
A4	PAPER BAG	RPFD0003	1	*6,*7
A5	O/I BOOK ENG CONT	RQTD0138-A	1	*1,*2,*3,*4,*5,*8,*9,*10, *11,*12
A5	O/I BOOK RUS	RQTD0145-R	1	*1,*10
A5	O/I BOOK POL	RQTD0146-Q	1	*1,*10
A5	O/I BOOK CZE	RQTD0147-S	1	*1,*10
A5	O/I BOOK HUN	RQTD0148-T	1	*1,*10
A5	O/I BOOK GER	RQTD0134-D	1	*2,*3,*4,*5,*8,*9,*11,*12
A5	O/I BOOK ITA	RQTD0135-V	1	*2,*3,*4,*5,*8,*9,*11,*12
A5	O/I BOOK DUT	RQTD0136-H	1	*2,*3,*4,*5,*8,*9,*11,*12
A5	O/I BOOK FRE PAL	RQTD0137-C	1	*4,*5,*8,*11
A5	O/I BOOK SPA	RQTD0139-M	1	*4,*5,*8,*11
A5	O/I BOOK POR	RQTD0140-U	1	*4,*5,*8,*11
A5	O/I BOOK ENG CONT	RQTD0138-A	1	*1,*2,*3,*4,*5,*8,*9,*10,* 11,*12
A5	O/I BOOK FIN	RQTD0141-K	1	*4,*5,*8,*11
A5	O/I BOOK SWE	RQTD0142-Z	1	*4,*5,*8,*11
A5	O/I BOOK DAN	RQTD0143-J	1	*4,*5,*8,*11
A5	O/I BOOK ENG UK	RQTD0144-B	1	*6,*7
A6	RF CABLE	K1TWACC00001	1	
A7	AV CORD	K2KA6CA00001	1	*1,*2,*3,*4,*5,*8,*9,*10, *11,*12

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
A8	ACC.BOX	VPK2246	1	

21.5. PRINTED CIRCUIT BOARD

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	MAIN PCB	REPD0010A	1	(RTL) *2,*3,*9
■	MAIN PCB	REPD0024A	1	(RTL) *2,*3,*9
■	MAIN PCB	REPD0010B	1	(RTL) *4,*5,*8
■	MAIN PCB	REPD0024B	1	(RTL) *4,*5,*8
■	MAIN PCB	REPD0010C	1	(RTL) *6
■	MAIN PCB	REPD0024C	1	(RTL) *6
■	MAIN PCB	REPD0010D	1	(RTL) *7
■	MAIN PCB	REPD0024D	1	(RTL) *7
■	MAIN PCB	REPD0010E	1	(RTL) *1
■	MAIN PCB	REPD0024E	1	(RTL) *1
■	MAIN PCB	REPD0010F	1	(RTL) *12
■	MAIN PCB	REPD0010G	1	(RTL) *11
■	MAIN PCB	REPD0010J	1	(RTL) *10
■	DECODER PCB	REPD0011A	1	(RTL)
■	POWER PCB	REPD0012A	1	(RTL)
■	FRONT SWITCH PCB	REPD0013A	1	(RTL)
■	FRONT JACK PCB	REPD0014A	1	(RTL)
TU7601	TUNER	ENGF7501GF	1	*2,*3,*4,*5,*8,*9,*11,*12
TU7601	TUNER	ENGF7502GF	1	*1,*10
TU7601	TUNER	ENG57D02G1F	1	*6
TU7601	TUNER	ENG57D03G1F	1	*7
■	TERMINAL PCB	REP3606A-C	1	(RTL)

21.6. ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1001	CHIP CAPACITOR	F1H1H1030007	1	
C1003	CHIP CAPACITOR	F1H1H1030007	1	
C1004	ALU ELEC CAPACITOR	ECEA1CKA470B	1	
C1005	ALU ELEC CAPACITOR	ECEA1CKA470B	1	
C1107	ALU ELEC CAPACITOR	F2A1V3300027	1	
C1108	CHIP CAPACITOR	F1H1A2240004	1	
C1109	CHIP CAPACITOR	F1H1H1030006	1	
C1112	CAPACITOR	F0C2G473A022	1	
C1121	CERAMIC CAPACITOR	F1BAF101A013	1	
C1122	CERAMIC CAPACITOR	ECKWNA102MEV	1	⚠
C1123	CERAMIC CAPACITOR	F1BAF101A013	1	⚠
C1124	CERAMIC CAPACITOR	F1BAF101A013	1	⚠
C1125	X2 CAPACITOR	ECQU2A683MVA	1	⚠
C1126	X2 CAPACITOR	ECQU2A683MVA	1	⚠
C1142	ALU ELEC CAPACITOR	EEUEB2G330E	1	
C1200	CHIP CAPACITOR	F1H1C104A008	1	
C1220	CAPACITOR	EEUFM1A471B	1	
C1221	ALU ELEC CAPACITOR	ECA1AHG221B	1	
C1230	CAPACITOR	EEUFM1H220B	1	
C1240	CAPACITOR	EEUFM1A681B	1	
C1241	ALU ELEC CAPACITOR	ECA1AHG221B	1	
C1250	CAPACITOR	EEUFM1E471B	1	
C1251	ALU ELEC CAPACITOR	ECA1EHG101B	1	
C1260	CAPACITOR	EEUFM1A122B	1	
C1261	ALU ELEC CAPACITOR	F2A1A2210012	1	
C1270	CAPACITOR	EEUFM1H220B	1	
C1280	CAPACITOR	EEUFM1A471B	1	
C1290	ALU ELEC CAPACITOR	EEUFM1E221B	1	
C1291	ALU ELEC CAPACITOR	ECA1EHG101B	1	
C1320	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C1321	CHIP CAPACITOR	F1H1C104A008	1	
C1340	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C1341	CHIP CAPACITOR	F1H1C104A008	1	
C1360	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C1362	ALU ELEC CAPACITOR	ECEA1AKA470B	1	
C1364	CHIP CAPACITOR	F1H1H1030007	1	
C1390	ALU ELEC CAPACITOR	F2A1C221A019	1	
C1501	CHIP CAPACITOR	F1H1H1030007	1	
C1602	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C1604	ALU ELEC CAPACITOR	ECEA1AKA220B	1	
C1606	CHIP CAPACITOR	F1H1H1030007	1	
C1607	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C1608	CHIP CAPACITOR	F1H1E104A030	1	
C2501	CHIP CAPACITOR	F1H1H1030007	1	
C2504	CHIP CAPACITOR	ECJ1VB1C563K	1	
C2505	CHIP CAPACITOR	ECJ1VB1C563K	1	
C2506	CHIP CAPACITOR	ECJ1VB1C563K	1	
C2507	CHIP CAPACITOR	ECJ1VB1C563K	1	
C2508	CHIP CAPACITOR	F1H1C104A042	1	
C2509	CHIP CAPACITOR	F1H1A105A004	1	
C2510	CHIP CAPACITOR	F1H1H330A736	1	
C2511	ALU ELEC CAPACITOR	ECEA0JKN220B	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C2512	ALU ELEC CAPACITOR	ECEA1EKA4R7B	1	
C2513	CHIP CAPACITOR	ECJ1VB1H392K	1	
C2514	CHIP CAPACITOR	F1H1E104A030	1	
C2515	CHIP CAPACITOR	F1H1C104A042	1	
C2516	CHIP CAPACITOR	F1H1A2240004	1	
C2517	CHIP CAPACITOR	F1H1E223A029	1	
C2518	CHIP CAPACITOR	F1H1E223A029	1	
C2519	CHIP CAPACITOR	F1H1C104A042	1	
C2520	CHIP CAPACITOR	F1H1H1020005	1	
C2521	ALU ELEC CAPACITOR	ECEA1CKA220B	1	
C2522	ALU ELEC CAPACITOR	F2A0J471A016	1	
C2523	CHIP CAPACITOR	F1H1C104A042	1	
C2524	CHIP CAPACITOR	F1H1C104A042	1	
C2525	CHIP CAPACITOR	F1H1C104A042	1	
C2526	CHIP CAPACITOR	F1H1E104A030	1	
C2527	CHIP CAPACITOR	F1H1H182A219	1	
C2529	CHIP CAPACITOR	F1H1A105A004	1	
C2530	ALU ELEC CAPACITOR	EEUFM1E221B	1	
C3001	CHIP CAPACITOR	F1H1H1510001	1	
C3002	CHIP CAPACITOR	F1H0J1050012	1	
C3003	CHIP CAPACITOR	F1H1C104A042	1	
C3005	CHIP CAPACITOR	F1H1H2700003	1	
C3006	CHIP CAPACITOR	F1H1C104A042	1	
C3007	CHIP CAPACITOR	F1J1A105A003	1	
C3008	ALU ELEC CAPACITOR	ECEA1EKA4R7B	1	
C3010	CHIP CAPACITOR	F1J1A105A003	1	
C3011	CHIP CAPACITOR	F1H1H1030007	1	
C3012	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C3014	CHIP CAPACITOR	F1H1A105A004	1	
C3015	CHIP CAPACITOR	F1H0J1050012	1	
C3017	CHIP CAPACITOR	F1H1C104A042	1	
C3019	CHIP CAPACITOR	F1H1C104A042	1	
C3020	ALU ELEC CAPACITOR	ECEA1HKA3R3B	1	
C3021	ALU ELEC CAPACITOR	ECEA1CKA100B	1	
C3023	CHIP CAPACITOR	F1H1H1030006	1	
C3024	CHIP CAPACITOR	ECJ1VB1H331K	1	
C3025	CHIP CAPACITOR	F1H1C104A042	1	
C3026	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C3027	ALU ELEC CAPACITOR	ECEA1HKA010B	1	
C3028	ALU ELEC CAPACITOR	ECEA1HKA4R7B	1	
C3029	ALU ELEC CAPACITOR	ECEA1HKAR47B	1	
C3030	CHIP CAPACITOR	F1H1E223A029	1	
C3031	CHIP CAPACITOR	F1H1C333A041	1	
C3032	ALU ELEC CAPACITOR	ECEA1HKA3R3B	1	
C3033	CHIP CAPACITOR	F1H1C104A042	1	
C3034	ALU ELEC CAPACITOR	ECEA1HKA2R2B	1	
C3035	CHIP CAPACITOR	F1H1E223A029	1	
C3036	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C3037	CHIP CAPACITOR	F1H1H1030007	1	
C3038	CHIP CAPACITOR	ECJ1VC1H030C	1	
C3039	CHIP CAPACITOR	F1H0J1050012	1	
C3040	CHIP CAPACITOR	F1H1H1030007	1	
C3041	CHIP CAPACITOR	F1H1H1030007	1	
C3042	CHIP CAPACITOR	F1H1E104A030	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3053	**CHIP CAPACITOR**	**F1H1H1030007**	**1**	
C3054	**CHIP CAPACITOR**	**F1H1H4700004**	**1**	
C3058	**CHIP CAPACITOR**	**F1H1C104A042**	**1**	
C3070	**CHIP CAPACITOR**	**F1H1C104A042**	**1**	
C4001	**ALU ELEC CAPACITOR**	**ECEA0JKA101B**	**1**	
C4003	**CHIP CAPACITOR**	**F1H1H472A219**	**1**	
C4004	**CHIP CAPACITOR**	**ECJ1VB1H122K**	**1**	
C4005	**ALU ELEC CAPACITOR**	**ECEA0JKA220B**	**1**	
C4006	**ALU ELEC CAPACITOR**	**ECEA1EKA4R7B**	**1**	
C4009	**ALU ELEC CAPACITOR**	**ECEA0JKA220B**	**1**	
C4011	**CHIP CAPACITOR**	**ECJ1VB1H822K**	**1**	
C4012	**ALU ELEC CAPACITOR**	**ECEA1HKA4R7B**	**1**	
C4013	**CHIP CAPACITOR**	**F1H1H1030007**	**1**	
C4016	**CHIP CAPACITOR**	**F1H1C104A042**	**1**	
C4017	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4018	**CHIP CAPACITOR**	**F1J1A105A003**	**1**	
C4019	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4020	**CHIP CAPACITOR**	**ECJ1VC1H221J**	**1**	
C4021	**PLAST FILM CAPACITOR**	**ECQB1H223JF3**	**1**	
C4022	**CHIP CAPACITOR**	**ECJ1VB1H152K**	**1**	
C4023	**ALU ELEC CAPACITOR**	**ECEA0JKA470B**	**1**	
C4024	**CHIP CAPACITOR**	**F1H1E223A029**	**1**	
C4026	**ALU ELEC CAPACITOR**	**ECEA0JKA470B**	**1**	
C4027	**ALU ELEC CAPACITOR**	**ECEA1HKA3R3B**	**1**	
C4301	**ALU ELEC CAPACITOR**	**ECEA1CKA101B**	**1**	
C4302	**ALU ELEC CAPACITOR**	**ECA1CAK470XB**	**1**	
C4303	**ALU ELEC CAPACITOR**	**ECA1CAK470XB**	**1**	
C4304	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C4305	**CHIP CAPACITOR**	**F1H1H4700004**	**1**	
C4306	**CHIP CAPACITOR**	**ECJ1VC1H471J**	**1**	
C4307	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C4308	**CHIP CAPACITOR**	**F1H1H4700004**	**1**	
C4309	**CHIP CAPACITOR**	**ECJ1VC1H471J**	**1**	
C4310	**ALU ELEC CAPACITOR**	**ECEA1CKA101B**	**1**	
C4311	**ALU ELEC CAPACITOR**	**ECEA0JKA470B**	**1**	
C4501	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4502	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4503	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4504	**PLAST FILM CAPACITOR**	**ECQB1H473JF3**	**1**	
C4505	**ALU ELEC CAPACITOR**	**ECEA1AKA330B**	**1**	
C4506	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4507	**ALU ELEC CAPACITOR**	**ECEA1CKA220B**	**1**	
C4508	**PLAST FILM CAPACITOR**	**ECQB1H153JF3**	**1**	
C4509	**CHIP CAPACITOR**	**F1H1C333A041**	**1**	
C4511	**CHIP CAPACITOR**	**F1H1H1030007**	**1**	
C4514	**CHIP CAPACITOR**	**F1H1H1030007**	**1**	
C4515	**ALU ELEC CAPACITOR**	**ECEA0JKA101B**	**1**	
C4516	**CHIP CAPACITOR**	**F1H1H1030007**	**1**	
C4517	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C4519	**CHIP CAPACITOR**	**F1H1A2240004**	**1**	
C4520	**PLAST FILM CAPACITOR**	**ECQB1H153JF3**	**1**	
C4521	**ALU ELEC CAPACITOR**	**ECEA1CKA220B**	**1**	
C4522	**ALU ELEC CAPACITOR**	**ECEA1CKA100B**	**1**	
C4523	**ALU ELEC CAPACITOR**	**ECEA1AKA330B**	**1**	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4524	PLAST FILM CAPACITOR	ECQB1H473JF3	1	
C4525	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C4526	CHIP CAPACITOR	F1H1H1030006	1	
C4527	CHIP CAPACITOR	F1H1C104A042	1	
C4528	CHIP CAPACITOR	F1H1C104A042	1	
C4529	ALU ELEC CAPACITOR	ECEA1CKA100B	1	
C4530	CHIP CAPACITOR	ECJ2FB0J225K	1	*1,*2,*3,*4,*5,*6,*7
C4530	CHIP CAPACITOR	F1J0J2250003	1	*8,*9,*10,*11,*12
C4531	CHIP CAPACITOR	ECJ2FB0J225K	1	*1,*2,*3,*4,*5,*6,*7
C4531	CHIP CAPACITOR	F1J0J2250003	1	*8,*9,*10,*11,*12
C4532	ALU ELEC CAPACITOR	ECEA1CKA100B	1	
C4533	ALU ELEC CAPACITOR	ECEA1CKA100B	1	
C4534	ALU ELEC CAPACITOR	ECEA1CKA470B	1	
C4535	CHIP CAPACITOR	F1J1A105A003	1	
C4536	ALU ELEC CAPACITOR	ECEA1AKA220B	1	
C4537	CHIP CAPACITOR	F1H1E104A030	1	
C4538	CHIP CAPACITOR	F1H1C104A042	1	
C4539	CHIP CAPACITOR	F1H1H1030006	1	
C4540	CHIP CAPACITOR	F1H1C104A042	1	
C4541	CHIP CAPACITOR	F1H1C104A042	1	
C4801	CHIP CAPACITOR	F1H1H1010005	1	
C4802	CHIP CAPACITOR	F1H1H1010005	1	
C4901	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4902	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4903	ALU ELEC CAPACITOR	ECEA0JKA220B	1	
C4904	CHIP CAPACITOR	F1H1H4700004	1	
C4905	CHIP CAPACITOR	F1H1H4700004	1	
C4906	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4907	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4908	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4909	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4910	CHIP CAPACITOR	F1H1C104A042	1	
C4911	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4912	CHIP CAPACITOR	F1H1H4700004	1	
C4913	CHIP CAPACITOR	F1H1H4700004	1	
C4914	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4915	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4916	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4917	CHIP CAPACITOR	F1H1A105A004	1	
C4918	CHIP CAPACITOR	F1H1E104A030	1	
C4919	CHIP CAPACITOR	F1H1C104A042	1	
C4920	CHIP CAPACITOR	F1H1A105A004	1	
C4921	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C4922	CHIP CAPACITOR	F1H1A105A004	1	
C4923	CHIP CAPACITOR	F1H1E104A030	1	
C4924	CHIP CAPACITOR	F1H1A105A004	1	
C4925	CHIP CAPACITOR	F1H1E104A030	1	
C4926	CHIP CAPACITOR	F1H1A105A004	1	
C4927	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C4928	CHIP CAPACITOR	F1H1C104A042	1	
C4929	CHIP CAPACITOR	F1H1C104A042	1	
C4930	CHIP CAPACITOR	F1H1A105A004	1	
C4931	CHIP CAPACITOR	F1H1A105A004	1	
C4932	CHIP CAPACITOR	F1H1A105A004	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4933	CHIP CAPACITOR	F1H1A105A004	1	
C4934	ALU ELEC CAPACITOR	F2A0J102A016	1	
C4935	CHIP CAPACITOR	F1H1E104A030	1	
C4936	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C4937	CHIP CAPACITOR	F1H1C104A042	1	
C4938	ALU ELEC CAPACITOR	ECEA0JKA331B	1	
C4939	ALU ELEC CAPACITOR	ECEA0JKA331B	1	
C4940	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C4941	ALU ELEC CAPACITOR	ECEA1AKA220B	1	
C4942	CHIP CAPACITOR	F1H1E104A030	1	
C4943	CHIP CAPACITOR	F1H1E104A030	1	
C4944	CHIP CAPACITOR	F1H1E104A030	1	
C4945	CHIP CAPACITOR	F1H1H1030007	1	
C4946	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4947	CHIP CAPACITOR	ECJ1VB1H471K	1	
C4948	CHIP CAPACITOR	F1H1A105A004	1	
C4949	CHIP CAPACITOR	F1H1A105A004	1	
C4951	CHIP CAPACITOR	F1H1H4700004	1	
C4972	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C4974	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C4975	CHIP CAPACITOR	F1H1E104A030	1	
C5001	CHIP CAPACITOR	F1H1H1030006	1	
C5002	CHIP CAPACITOR	F1H1H1030006	1	
C5003	CHIP CAPACITOR	F1H1H1030006	1	
C5004	CHIP CAPACITOR	F1H1H1030006	1	
C5005	CHIP CAPACITOR	F1H1C104A042	1	
C5006	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C5007	CHIP CAPACITOR	F1H1E104A030	1	
C6003	CHIP CAPACITOR	ECJ1VB1H471K	1	
C6004	CHIP CAPACITOR	F1H1H1030007	1	
C6005	CHIP CAPACITOR	F1H1H1030007	1	
C6006	CHIP CAPACITOR	F1H1H330A736	1	
C6007	CHIP CAPACITOR	F1H1H1030007	1	
C6008	ALU ELEC CAPACITOR	F2A0J471A016	1	
C6009	CHIP CAPACITOR	ECJ1VC1H180J	1	
C6010	CHIP CAPACITOR	ECJ1VC1H180J	1	
C6011	CHIP CAPACITOR	ECJ1VC1H180J	1	
C6012	CHIP CAPACITOR	F1H1H1500009	1	
C6015	ALU ELEC CAPACITOR	ECEA1CKA100B	1	
C6016	CHIP CAPACITOR	F1H1H1030007	1	
C6017	CHIP CAPACITOR	ECJ1VB1H681K	1	
C6022	CHIP CAPACITOR	ECJ1VB1H221K	1	
C6023	CHIP CAPACITOR	F1H1A105A004	1	
C6024	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C6025	CHIP CAPACITOR	F1H1E104A030	1	
C6029	CHIP CAPACITOR	F1H1A105A004	1	
C6032	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C6035	CHIP CAPACITOR	F1H0J1050012	1	
C6036	CHIP CAPACITOR	ECJ1VB1H561K	1	
C6037	CHIP CAPACITOR	F1H1H330A736	1	
C6038	CHIP CAPACITOR	F1H1E104A030	1	
C6039	CHIP CAPACITOR	F1J1A105A003	1	
C6040	CHIP CAPACITOR	F1H1E104A030	1	
C6041	CHIP CAPACITOR	ECJ2YB0J475K	1	*1,*2,*3,*4,*5,*6,*7,*8,*9

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C6042	CHIP CAPACITOR	ECJ1VB1C563K	1	
C6101	CHIP CAPACITOR	F1H1E104A030	1	
C6103	CHIP CAPACITOR	F1H1E104A030	1	
C6104	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C6105	CHIP CAPACITOR	F1H1H104A220	1	
C6106	CHIP CAPACITOR	F1H1H1030007	1	
C6107	CHIP CAPACITOR	F1H1H1030007	1	
C6108	CHIP CAPACITOR	F1H1H1030007	1	
C6109	CHIP CAPACITOR	F1H1H1030007	1	
C6110	CHIP CAPACITOR	F1H1H1030007	1	
C7301	CHIP CAPACITOR	F1H1H1030007	1	
C7302	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C7303	CHIP CAPACITOR	F1H1H1030007	1	
C7305	CHIP CAPACITOR	F1H1H330A736	1	
C7306	CHIP CAPACITOR	F1H1H330A736	1	
C7307	CHIP CAPACITOR	F1H1H332A219	1	*2,*3,*9,*12
C7308	CHIP RESISTOR	D0GB822JA002	1	
C7308	CHIP CAPACITOR	ECJ1VC1H681J	1	*2,*3,*9,*12
C7309	CHIP CAPACITOR	F1H1H332A219	1	*2,*3,*9,*12
C7310	CHIP CAPACITOR	ECJ1VC1H681J	1	*2,*3,*9,*12
C7311	CHIP CAPACITOR	F1H1H1030007	1	
C7312	CHIP CAPACITOR	F1H1C104A042	1	
C7313	CHIP CAPACITOR	ECJ1VF1C474Z	1	*2,*3,*9,*12
C7314	CHIP CAPACITOR	F1H1C104A042	1	
C7314	CHIP CAPACITOR	F1H1H1030006	1	
C7315	CHIP CAPACITOR	F1H1H9R0A735	1	*2,*3,*9,*12
C7316	CHIP CAPACITOR	F1H1E104A030	1	
C7317	CHIP CAPACITOR	ECJ1VB1H152K	1	
C7318	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C7319	CHIP CAPACITOR	F1J1A105A003	1	
C7320	CHIP CAPACITOR	F1J1A105A003	1	
C7321	CHIP CAPACITOR	F1H1H472A219	1	
C7322	CHIP CAPACITOR	ECJ1VF1C474Z	1	*2,*3,*9,*12
C7323	CHIP CAPACITOR	F1H1E104A030	1	
C7324	CHIP CAPACITOR	ECJ1VB1H152K	1	
C7325	CHIP CAPACITOR	F1H1C104A042	1	
C7325	CHIP CAPACITOR	F1H1H1030006	1	
C7326	CHIP CAPACITOR	F1H1A105A004	1	
C7327	CHIP CAPACITOR	ECJ1VB1H152K	1	
C7328	CHIP CAPACITOR	F1H1E104A030	1	
C7328	CHIP CAPACITOR	ECJ1VF1C474Z	1	*2,*3,*9,*12
C7329	CHIP CAPACITOR	ECJ1VF1C474Z	1	*2,*3,*9,*12
C7330	CHIP CAPACITOR	F1H1C104A042	1	
C7331	CHIP CAPACITOR	F1J1A105A003	1	
C7331	CHIP CAPACITOR	F1J1C4740012	1	*2,*3,*9,*12
C7341	CHIP CAPACITOR	F1H1H472A219	1	
C7342	CHIP CAPACITOR	F1H1H472A219	1	
C7343	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C7501	ALU ELEC CAPACITOR	ECEA1VKA100B	1	
C7502	CHIP CAPACITOR	F1H1E104A030	1	
C7507	ALU ELEC CAPACITOR	F4D55473A013	1	
C7508	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C7509	CHIP CAPACITOR	ECJ1VF1E683Z	1	
C7510	CHIP CAPACITOR	F1H1H1030007	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7511	CHIP CAPACITOR	F1H1E104A030	1	
C7603	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C7604	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C7605	CHIP CAPACITOR	F1H1H1030007	1	
C7606	CHIP CAPACITOR	F1H1H1030007	1	
C7607	ALU ELEC CAPACITOR	ECEA1HKA010B	1	
C7608	CHIP CAPACITOR	F1H1H104A220	1	
C7609	CHIP CAPACITOR	F1H1H330A736	1	
C7610	CHIP CAPACITOR	F1H1H330A736	1	
C7613	CHIP CAPACITOR	ECJ1VB1H221K	1	
C7614	ALU ELEC CAPACITOR	ECEA0JKA101B	1	
C7615	CHIP CAPACITOR	F1H1H1030007	1	
C7617	CHIP CAPACITOR	F1H1H1030007	1	
C7618	CHIP CAPACITOR	F1H1E104A030	1	
C7620	CHIP CAPACITOR	F1H1E104A030	1	
C7623	CHIP CAPACITOR	F1H1H1030007	1	
C7627	CHIP CAPACITOR	ECJ1VB1H471K	1	
C7628	CHIP CAPACITOR	F1H1H1020005	1	
C8001	CHIP CAPACITOR	F1H1E104A030	1	
C8002	CHIP CAPACITOR	F1H1E104A030	1	
C8003	CHIP CAPACITOR	F1H1E104A030	1	
C8004	CHIP CAPACITOR	F1H1E104A030	1	
C8005	CHIP CAPACITOR	F1H1A105A004	1	
C8007	CHIP CAPACITOR	F1H1E104A030	1	
C8008	CHIP CAPACITOR	F1H1E104A030	1	
C8009	CHIP CAPACITOR	F1H1E104A030	1	
C8010	CHIP CAPACITOR	F1H1E104A030	1	
C8011	CHIP CAPACITOR	F1H1E104A030	1	
C8012	CHIP CAPACITOR	F1H1E104A030	1	
C8013	CHIP CAPACITOR	F1H1E104A030	1	
C8014	CHIP CAPACITOR	F1H1E104A030	1	
C8015	CHIP CAPACITOR	F1H1C104A042	1	
C8016	CHIP CAPACITOR	F1H1E104A030	1	
C8017	CHIP CAPACITOR	F1H1E104A030	1	
C8018	CHIP CAPACITOR	F1H1E104A030	1	
C8019	CHIP CAPACITOR	ECJ2FF1A106Z	1	
C8020	CHIP CAPACITOR	F1H1E104A030	1	
C8021	CHIP CAPACITOR	F1H1E104A030	1	
C8022	CHIP CAPACITOR	ECJ2FF1A106Z	1	
C8023	CHIP CAPACITOR	ECJ2FF1A106Z	1	
C8026	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C8027	ALU ELEC CAPACITOR	ECEA0JKA470B	1	
C8028	CHIP CAPACITOR	F1H1H1010005	1	
C8029	CHIP CAPACITOR	F1H0J1050012	1	
C8030	CHIP CAPACITOR	F1H0J1050012	1	
C8032	CHIP CAPACITOR	F1H1C104A042	1	
C8035	CHIP CAPACITOR	F1H1C104A042	1	
C8036	CHIP CAPACITOR	F1H1C104A042	1	
C8037	CHIP CAPACITOR	F1H1C104A042	1	
C8038	CHIP CAPACITOR	F1H1H222A219	1	
C8039	CHIP CAPACITOR	F1H1H222A219	1	
C8040	CHIP CAPACITOR	F1H0J1050012	1	
C8041	CHIP CAPACITOR	F1H0J1050012	1	
C8042	CHIP CAPACITOR	F1H0J1050012	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8043	CHIP CAPACITOR	F1H0J1050012	1	
C8044	CHIP CAPACITOR	F1H0J1050012	1	
C8045	CHIP CAPACITOR	F1H0J1050012	1	
C8046	CHIP CAPACITOR	F1H0J1050012	1	
C8047	CHIP CAPACITOR	F1H0J1050012	1	
C8048	CHIP CAPACITOR	F1H1E104A030	1	
C8049	CHIP CAPACITOR	F1H1E104A030	1	
C8050	CHIP CAPACITOR	F1H1E104A030	1	
C8051	CHIP CAPACITOR	F1H1E104A030	1	
C8052	CHIP CAPACITOR	F1H1E104A030	1	
C8053	CHIP CAPACITOR	F1H1E104A030	1	
C8054	CHIP CAPACITOR	F1H1E104A030	1	
C8055	CHIP CAPACITOR	F1H1E104A030	1	
C8056	CHIP CAPACITOR	F1H1E104A030	1	
C8057	CHIP CAPACITOR	F1H1E104A030	1	
C8058	CHIP CAPACITOR	F1H1E104A030	1	
C8059	CHIP CAPACITOR	F1H1E104A030	1	
C8060	CHIP CAPACITOR	F1H1E104A030	1	
C8061	CHIP CAPACITOR	F1H1E104A030	1	
C8062	CHIP CAPACITOR	F1H1E104A030	1	
C8063	CHIP CAPACITOR	F1H1E104A030	1	
C8064	ALU ELEC CAPACITOR	EEUFM1A101B	1	
C8065	ALU ELEC CAPACITOR	F2A0J471A016	1	
C8066	ALU ELEC CAPACITOR	F2A0J471A016	1	
C8067	ALU ELEC CAPACITOR	ECEA0JKA221B	1	
C8069	CHIP CAPACITOR	ECJ1VB1E183K	1	
C8070	CHIP CAPACITOR	F1H1C333A041	1	
C8071	CHIP CAPACITOR	ECJ1VB1H562K	1	
C8073	CHIP CAPACITOR	F1J1C105A091	1	
C8074	CHIP CAPACITOR	F1J1C105A091	1	
C8075	CHIP CAPACITOR	F1H1H472A219	1	
C8077	CHIP CAPACITOR	ECJ1VC1H102J	1	
C8078	CHIP CAPACITOR	ECJ1VC1H102J	1	
C8079	CHIP CAPACITOR	ECJ1VC1H102J	1	
C8080	CHIP CAPACITOR	ECJ1VB1H152K	1	
C8082	CHIP CAPACITOR	ECJ1VC1H821J	1	
C8083	CHIP CAPACITOR	ECJ1VC1H100D	1	
C8085	CHIP CAPACITOR	F1H1H2700003	1	
C8086	ALU ELEC CAPACITOR	F2A0J471A016	1	
C8087	ALU ELEC CAPACITOR	F2A0J471A016	1	
C8088	CHIP CAPACITOR	ECJ1VC1H102J	1	
C8089	CHIP CAPACITOR	ECJ1VB1H122K	1	
C8090	CHIP CAPACITOR	ECJ1VC1H221J	1	
C8091	CHIP CAPACITOR	F1H1H1010005	1	
C8092	CHIP CAPACITOR	F1H1E104A030	1	
C8101	CHIP CAPACITOR	F1H1E104A030	1	
C8102	CHIP CAPACITOR	F1H1E104A030	1	
C8103	CHIP CAPACITOR	ECJ2FF1A106Z	1	
C8104	CHIP CAPACITOR	F1H1E104A030	1	
C8105	CHIP CAPACITOR	F1H1E104A030	1	
C8106	CHIP CAPACITOR	F1H1E104A030	1	
C8107	CHIP CAPACITOR	F1H1E104A030	1	
C8108	CHIP CAPACITOR	F1H1E104A030	1	
C8109	CHIP CAPACITOR	F1H1E104A030	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8110	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8202	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8203	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8204	**ALU ELEC CAPACITOR**	**EEUFM1A221B**	**1**	
C8205	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8206	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8207	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8208	**ALU ELEC CAPACITOR**	**ECA1CM470B**	**1**	
C8209	**ALU ELEC CAPACITOR**	**EEUFM1E470B**	**1**	
C8210	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8211	**CHIP CAPACITOR**	**F1H1C104A042**	**1**	
C8212	**CHIP CAPACITOR**	**F1H1C104A042**	**1**	
C8310	**CHIP CAPACITOR**	**F1H1H1510001**	**1**	
C8312	**CHIP CAPACITOR**	**F1H0J1050012**	**1**	
C8313	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8314	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8315	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8410	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
C8411	**ALU ELEC CAPACITOR**	**F2A0J471A016**	**1**	
C8413	**CHIP CAPACITOR**	**F1H1E104A030**	**1**	
D1002	**DIODE**	**MAZ4130NLF**	**1**	
D1003	**DIODE**	**MAZ4051NMF**	**1**	
D1004	**DIODE**	**MA2C165001VT**	**1**	
D1101	**DIODE**	**B0EAKV000015**	**1**	
D1102	**DIODE**	**B0EAKV000015**	**1**	
D1103	**DIODE**	**B0EAKV000015**	**1**	
D1104	**DIODE**	**B0EAKV000015**	**1**	
D1105	**DIODE**	**B0HADV000001**	**1**	
D1106	**DIODE**	**B0AAGP000004**	**1**	
D1110	**SURGE ABSORBER**	**ERZVA5V471**	**1**	⚠
D1220	**DIODE**	**B0JAME000025**	**1**	
D1230	**DIODE**	**B0AAGP000004**	**1**	
D1240	**DIODE**	**B0JAMG000010**	**1**	
D1250	**DIODE**	**B0HANM000021**	**1**	
D1260	**DIODE**	**B0JAML000010**	**1**	
D1270	**DIODE**	**B0AAGP000004**	**1**	
D1280	**DIODE**	**B0JAMG000010**	**1**	
D1290	**DIODE**	**B0JAML000004**	**1**	
D1360	**DIODE**	**MAZ4056NHF**	**1**	
D1501	**DIODE**	**B3EA00000072**	**1**	
D1601	**DIODE**	**MAZ4051NMF**	**1**	
D1602	**DIODE**	**MA2C165001VT**	**1**	
D2501	**DIODE**	**MA2C165001VT**	**1**	
D2502	**DIODE**	**MA2C165001VT**	**1**	
D4501	**DIODE**	**MA2C165001VT**	**1**	
D4502	**DIODE**	**MA2C165001VT**	**1**	
D4503	**DIODE**	**MAZ409100F**	**1**	
D4801	**LED DIODE**	**B3ACA0000243**	**1**	
D4901	**DIODE**	**MAZ4051NMF**	**1**	
D4902	**DIODE**	**MAZ4051NMF**	**1**	
D4903	**DIODE**	**MA2C165001VT**	**1**	
D4904	**DIODE**	**MAZ4056NHF**	**1**	
D4905	**DIODE**	**MA2C165001VT**	**1**	
D4906	**DIODE**	**MA2C165001VT**	**1**	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D7301	DIODE	MA2C165001VT	1	
D7503	DIODE	B0JACE000001	1	
D7504	DIODE	MAZ4200NLF	1	
D7601	DIODE	MAZ43000MF	1	
D8001	DIODE	MA2J72800L	1	
D8002	CHIP DIODE	MA2J11100L	1	
DP7501	FL DISPLAY	A2BB00000140	1	
F1101	MINIATURE FUSE	K5D162BK0005	1	⚠
FC7501	FFC CABLE 3PIN	REZD0018	1	
IC1101	INTEGRATED CIRCUIT	C0DACZZ00009	1	
IC1200	VOLTAGE REGULATOR	C0DAEJC00006	1	
IC1320	SHUNT REGULATOR	C0CAAYA00005	1	
IC1340	SHUNT REGULATOR	C0CAAYA00005	1	
IC1390	VOLTAGE REGULATOR	C0DBZHG00017	1	
IC1501	PHOTO COUPLER	B3NAA0000073	1	
IC1502	PHOTO COUPLER	B3NAA0000073	1	
IC2501	MOTOR DRIVE IC	C1AB00001767	1	
IC3001	INTEGRATED CIRCUIT	C1AB00002084	1	
IC4301	OPERATION AMP	C0ABBB000109	1	
IC4501	INTEGRATED CIRCUIT	AN3656NFBPBV	1	
IC4502	INTEGRATED CIRCUIT	C0JBAR000292	1	
IC4901	INTEGRATED CIRCUIT	C1AB00000933	1	
IC4902	INTEGRATED CIRCUIT	C1AB00001466	1	
IC4903	INTEGRATED CIRCUIT	C1AB00001466	1	
IC4904	INTEGRATED CIRCUIT	C1AB00001466	1	
IC4905	INTEGRATED CIRCUIT	C1AB00002141	1	
IC4906	INTEGRATED CIRCUIT	C1AB00001486	1	
IC6001	SYSCON IC	C2CBJG000580	1	*1,*6,*7,*10
IC6001	SYSCON IC	C2CBJG000579	1	*2,*3,*4,*5,*8,*9,*11,*12
IC6002	EEPROM	C3EAGC000026	1	
IC6004	VOLTAGE REGULATOR	C0DBCHD00004	1	
IC6005	VOLTAGE REGULATOR	C0DBZJG00007	1	
IC6006	INTEGRATED CIRCUIT	C1AB00002140	1	*1,*2,*3,*4,*5,*6,*7,*8,*9
IC6101	MICROCONTROLLER	MN101C35DCE	1	
IC7301	INTEGRATED CIRCUIT	C1AB00002225	1	*1,*4,*5,*6,*7,*8,*10,*11
IC7301	INTEGRATED CIRCUIT	C0ZBZ0001081	1	*2,*3,*9,*12
IC7503	RESET IC	C0EBE0000120	1	
IC7504	RESET IC	C0EBH0000458	1	
IC8001	DVD-IC	MN2DS0005VP	1	
IC8002	RESET IC	C0EBE0000384	1	
IC8003	INTEGRATED CIRCUIT	C3EBGC000056	1	
IC8101	16 MBIT LOW VOLTAGE	RFKFVP82L160	1	
IC8102	SDRAM	C3ABPG000145	1	
IC8201	MOTOR IC	C0GBG0000048	1	
IC8402	INTEGRATED CIRCUIT	C0FBBK000047	1	
IP1220	IC PROTECTOR	UNH000600A	1	
IP1280	IC PROTECTOR	D4FAR4000001	1	
IR7501	REMOTE SENSOR	B3RAB0000024	1	
J1	EARTH WIRE	VEE0U97	1	
JK4801	FRONT AV 3X CINCH	K2HA303A0021	1	
JK4902	SCART CONNECTOR	K2HZ242B0002	1	
JK4903	CONNECTOR	K2HA306B0086	1	
JK4904	CONNECTOR	K2HA612B0053	1	
K1013	CHIP RESISTOR	D0YBR0000002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
K4901	CHIP RESISTOR	D0YBR0000002	1	
K4902	CHIP RESISTOR	D0YBR0000002	1	
K5004	CHIP RESISTOR	D0YBR0000002	1	
K6004	CHIP RESISTOR	D0YBR0000002	1	
K7306	CHIP RESISTOR	D0YBR0000002	1	
K7307	CHIP RESISTOR	D0YBR0000002	1	
K8004	CHIP RESISTOR	D0YBR0000002	1	
K8005	CHIP RESISTOR	D0YBR0000002	1	
K8006	CHIP RESISTOR	D0YBR0000002	1	
K8007	CHIP RESISTOR	D0YBR0000002	1	
K8008	CHIP RESISTOR	D0YBR0000002	1	
K8101	CHIP RESISTOR	D0YBR0000002	1	
K8102	CHIP RESISTOR	D0YDR0000006	1	
L1102	BEAD CORES	EXCELDR35V	1	
L1120	LINE FILTER	ELF15N003AB	1	⚠
L1121	LINE FILTER	ELF15N003AB	1	⚠
L1220	CHOKE COIL RADIAL	G0A220GA0026	1	
L1240	CHOKE COIL RADIAL	G0A220GA0026	1	
L1250	CHOKE COIL RADIAL	G0A220GA0026	1	
L1260	CHOKE COIL RADIAL	G0A220GA0026	1	
L1290	CHOKE COIL RADIAL	G0A220GA0026	1	
L3002	CHOKE COIL AXIAL	G0C820JA0019	1	
L3003	CHOKE COIL AXIAL	G0C270JA0019	1	
L3004	CHOKE COIL AXIAL	G0C680JA0019	1	
L3005	CHOKE COIL AXIAL	G0C270JA0019	1	
L3006	CHOKE COIL AXIAL	G0C120JA0019	1	
L3010	CHOKE COIL AXIAL	G0C390JA0019	1	
L4002	CHOKE COIL AXIAL	G0C680JA0019	1	
L4501	CHOKE COIL AXIAL	G0C270JA0019	1	
L4502	CHOKE COIL AXIAL	G0C270JA0019	1	
L4902	CHOKE COIL AXIAL	G0C680JA0019	1	
L4903	CHOKE COIL AXIAL	G0C270JA0019	1	
L4906	CHOKE COIL AXIAL	G0C680JA0019	1	
L4971	CHOKE COIL AXIAL	G0C680JA0019	1	
L5001	CHOKE COIL AXIAL	G0C680JA0019	1	
L6001	CHOKE COIL AXIAL	G0C220JA0019	1	
L6002	CHOKE COIL AXIAL	G0C330JA0019	1	*1,*10
L6006	CHOKE COIL AXIAL	G0C100JA0019	1	*1,*2,*3,*4,*5,*6,*7,*8,*9
L6101	CHOKE COIL AXIAL	G0C820JA0019	1	
L7301	CHOKE COIL AXIAL	G0C1R0JA0019	1	
L7601	CHOKE COIL AXIAL	G0C270JA0019	1	
L7602	CHOKE COIL AXIAL	G0C270JA0019	1	
L7603	CHOKE COIL AXIAL	G0C270JA0019	1	
L7605	CHOKE COIL AXIAL	G0C2R2JA0019	1	
L7606	CHOKE COIL AXIAL	G0C390JA0019	1	
L7607	CHOKE COIL AXIAL	G0C2R2JA0019	1	
L7607	CHOKE COIL AXIAL	G0C470JA0019	1	*2,*3,*9,*12
L8002	CHIP COIL	G1C100KA0069	1	
L8003	CHIP COIL	G1C100KA0069	1	
L8004	CHIP COIL	G1C100KA0069	1	
L8005	CHIP COIL	G1C100KA0069	1	
LB1213	BEAD CORE	J0JBC0000011	1	
LB1214	BEAD CORE	J0JHC0000070	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
LB1217	BEAD CORE	J0JHC0000070	1	
LB1218	BEAD CORE	J0JHC0000070	1	
LB4002	CHIP RESISTOR	D0YBR0000002	1	
LB4004	CHIP RESISTOR	D0YBR0000002	1	
LB4308	BEAD CORE	J0JCC0000062	1	
LB4309	BEAD CORE	J0JCC0000062	1	
LB4903	CHIP RESISTOR	D0GB221JA002	1	
LB4904	CHIP RESISTOR	D0GB221JA002	1	
LB4905	CHIP RESISTOR	D0YBR0000002	1	
LB4906	CHIP RESISTOR	D0YBR0000002	1	
LB4909	CHIP RESISTOR	D0YBR0000002	1	
LB4910	CHIP RESISTOR	D0GB221JA002	1	
LB4911	CHIP RESISTOR	D0GB221JA002	1	
LB4971	CHIP RESISTOR	D0YBR0000002	1	
LB6001	CHIP RESISTOR	D0YBR0000002	1	
LB7301	CHIP RESISTOR	D0YDR0000006	1	
LB7302	BEAD CORE	J0JBC0000011	1	
LB7303	CHIP RESISTOR	D0YDR0000006	1	
LB8001	BEAD CORE	J0JCC0000062	1	
LB8002	BEAD CORE	J0JCC0000062	1	
LB8003	BEAD CORE	J0JHC0000045	1	
LB8004	BEAD CORE	J0JHC0000045	1	
LB8005	CHIP RESISTOR	D0YBR0000002	1	
LB8006	CHIP RESISTOR	D0YBR0000002	1	
LB8007	CHIP RESISTOR	D0YBR0000002	1	
LB8008	CHIP RESISTOR	D0YBR0000002	1	
LB8011	CHIP RESISTOR	D0YBR0000002	1	
LB8012	CHIP RESISTOR	D0YBR0000002	1	
LB8013	CHIP RESISTOR	D0YBR0000002	1	
LB8014	CHIP RESISTOR	D0YBR0000002	1	
LB8015	BEAD CORE	J0JDC0000047	1	
LB8016	BEAD CORE	J0JCC0000166	1	
LB8017	BEAD CORE	J0JHC0000045	1	
LB8018	BEAD CORE	J0JHC0000045	1	
LB8101	BEAD CORE	J0JHC0000045	1	
LB8302	BEAD CORE	J0JBC0000013	1	
LB8303	BEAD CORE	J0JBC0000013	1	
LB8304	BEAD CORE	J0JBC0000013	1	
LB8306	COIL (RLBV252AV-Y)	J0JBC0000019	1	
LB8401	CHIP RESISTOR	D0YBR0000002	1	
LB8402	BEAD CORE	J0JBC0000013	1	
LB8403	BEAD CORE	J0JBC0000013	1	
LB8404	BEAD CORE	J0JBC0000011	1	
P1001	CONNECTOR 13POL.	K1KB13AA0032	1	
P1101	AC INLET	K2AA2H000007	1	⚠
P1501	CONNECTOR	K1KA02A00375	1	
P2501	CONNECTOR	K1KA08A00290	1	
P2502	CONNECTOR	K1MN07A00030	1	
P4001	CONNECTOR	K1MZ02A00003	1	
P4002	CONNECTOR	K1MN06A00042	1	
P5001	CONNECTOR	K1MN09A00029	1	
P8001	CONNECTOR 26POL.	K1MN26A00061	1	
P8002	CONNECTOR	K1KB09A00047	1	
P8003	CONNECTOR 19POL.	K1KB19AA0032	1	

[illegible]	[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
P8201	CONNECTOR 6POL.	K1MN06A00049	1	
PP4801	CONNECTOR	K1KA12B00136	1	
PP6101	CONNECTOR	K1KA02A00375	1	
PS1301	CONNECTOR	K1KA13A00074	1	
PS1302	CONNECTOR	K1KA09A00210	1	
PS4301	CONNECTOR	K1KA19A00007	1	
PS7501	CONNECTOR	K1KB12B00047	1	
Q1002	TRANSISTOR	B1AAGD000016	1	
Q1003	TRANSISTOR	B1AAGD000016	1	
Q1004	TRANSISTOR	B1AAGD000016	1	
Q1200	PHOTO COUPLER	B3PBA0000237	1	⚠
Q1321	TRANSISTOR	2SD19960SA	1	
Q1322	TRANSISTOR	2SD19960SA	1	
Q1341	TRANSISTOR	B1AAGD000016	1	
Q1360	TRANSISTOR	2SD0592ARA	1	
Q1501	PHOTO TRANSISTOR	PNB2302MF	1	
Q1502	PHOTO TRANSISTOR	PNB2302MF	1	
Q1601	TRANSISTOR	B1AAGD000016	1	
Q1602	TRANSISTOR	B1AAGD000016	1	
Q3001	TRANSISTOR	2SD0601ARN	1	
Q4003	TRANSISTOR	2SD0601ARN	1	
Q4004	TRANSISTOR	2SD0601ARN	1	
Q4005	TRANSISTOR	2SD0602ARL	1	
Q4006	TRANSISTOR	2SB0710ARL	1	
Q4901	TRANSISTOR	2SD0601ARN	1	
Q4902	TRANSISTOR	2SB0709ARL	1	
Q4903	TRANSISTOR	2SB0709ARL	1	
Q4904	TRANSISTOR	B1AAGD000016	1	
Q4905	CHIP TRANSISTOR	2SD132800L	1	
Q4906	TRANSISTOR	2SD0601ARN	1	
Q4907	TRANSISTOR	2SD0601ARN	1	
Q4908	TRANSISTOR	2SD0601ARN	1	
Q4909	TRANSISTOR	2SB0709ARL	1	
Q4910	TRANSISTOR	2SB0709ARL	1	
Q4971	TRANSISTOR	2SD0601ARN	1	
Q6001	TRANSISTOR	2SD0601ARN	1	
Q6002	TRANSISTOR	2SD0601ARN	1	
Q6003	TRANSISTOR	2SB0709ARL	1	
Q8001	TRANSISTOR	2SD1819ARL	1	
Q8002	TRANSISTOR	2SD1819ARL	1	
Q8003	SS-TRANSISTOR	2SB1218A0L	1	
Q8004	SS-TRANSISTOR	2SB1218A0L	1	
QR1001	TRANSISTOR	UNR211300L	1	
QR1002	TRANSISTOR	UNR221300L	1	
QR4001	TRANSISTOR	UNR221100L	1	
QR4002	TRANSISTOR	UNR211300L	1	
QR4005	TRANSISTOR	UNR221100L	1	
QR4501	TRANSISTOR	B1GBCFGA0002	1	
QR4502	TRANSISTOR	UNR211300L	1	
QR4503	TRANSISTOR	B1GBCFGA0002	1	
QR4504	TRANSISTOR	B1GBCFGA0002	1	
QR4901	TRANSISTOR	UNR221400L	1	
QR4902	TRANSISTOR	UNR221300L	1	
QR4903	TRANSISTOR	B1GBCFGA0002	1	

[illegible]	[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
QR4904	TRANSISTOR	B1GBCFGA0002	1	
QR4905	TRANSISTOR	UNR211300L	1	
QR4906	TRANSISTOR	UNR221400L	1	
QR4907	TRANSISTOR	UNR221100L	1	
QR4908	TRANSISTOR	UNR221100L	1	
QR4909	TRANSISTOR	B1GBCFGA0002	1	
QR4910	TRANSISTOR	B1GBCFGA0002	1	
QR4911	TRANSISTOR	B1GBCFGA0002	1	
QR4912	TRANSISTOR	B1GBCFGA0002	1	
QR6001	TRANSISTOR	B1GBCFJA0002	1	
QR6101	TRANSISTOR	B1GDCFJJ0002	1	
QR8001	TRANSISTOR	UNR212100L	1	
QR8002	TRANSISTOR	UNR521100L	1	
QR8003	TRANSISTOR	UNR521L00L	1	
QR8005	TRANSISTOR	UNR521L00L	1	
R1002	CARBON RESISTOR	ERDS2TJ102T	1	
R1003	CARBON RESISTOR	ERDS2TJ331T	1	
R1004	CHIP RESISTOR	D0GB103JA002	1	
R1006	CARBON RESISTOR	ERDS2TJ331T	1	
R1007	CARBON RESISTOR	ERDS2TJ331T	1	
R1008	CARBON RESISTOR	ERDS2TJ332T	1	
R1010	CHIP RESISTOR	D0GB220JA002	1	
R1102	CARBON RESISTOR	ERDS2TJ100T	1	
R1103	CARBON RESISTOR	ERDS2TJ334T	1	
R1104	CARBON RESISTOR	ERDS2TJ334T	1	
R1105	SOLID RESISTOR	ERG2SJ683E	1	
R1107	METAL RESISTOR	ERX12SJR68E	1	
R1110	CARBON RESISTOR	ERDS2FJ105T	1	
R1111	CARBON RESISTOR	ERDS2FJ105T	1	
R1200	CHIP RESISTOR	D1BB33020002	1	
R1201	CHIP RESISTOR	D1BB33020002	1	
R1202	CHIP RESISTOR	D1BB2201A010	1	
R1203	CHIP RESISTOR	D1BB22020002	1	
R1204	CHIP RESISTOR	D0GB102JA002	1	
R1205	CHIP RESISTOR	D0GB222JA002	1	
R1206	CHIP RESISTOR	D0GB271JA002	1	
R1207	CHIP RESISTOR	D1BB8201A010	1	
R1208	CHIP RESISTOR	D1BB5602A010	1	
R1290	CHIP RESISTOR	D0GB103JA002	1	
R1320	CHIP RESISTOR	D0GB821JA002	1	
R1323	CHIP RESISTOR	D0YBR0000002	1	
R1325	CHIP RESISTOR	D0GB1R0JA002	1	
R1326	CHIP RESISTOR	D0GB1R0JA002	1	
R1327	CHIP RESISTOR	D0GB101JA002	1	
R1329	CHIP RESISTOR	D0YBR0000002	1	
R1333	CHIP RESISTOR	D0GB1R0JA002	1	
R1334	CHIP RESISTOR	D0GB1R0JA002	1	
R1335	CHIP RESISTOR	D0GB1R0JA002	1	
R1336	CHIP RESISTOR	D0GB1R0JA002	1	
R1340	CHIP RESISTOR	D0YBR0000002	1	
R1343	CHIP RESISTOR	D1BB20010002	1	
R1344	CHIP RESISTOR	D1BB1201A010	1	
R1345	CHIP RESISTOR	D0YBR0000002	1	
R1347	CHIP RESISTOR	D0GB101JA002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1360	CARBON RESISTOR	ERDS2TJ471T	1	
R1390	CHIP RESISTOR	D0GB222JA002	1	
R1501	CARBON RESISTOR	ERDS2TJ151T	1	
R1502	CHIP RESISTOR	D0GB121JA002	1	
R1503	CHIP RESISTOR	D0GB273JA002	1	
R1504	CHIP RESISTOR	D0GB273JA002	1	
R1505	CHIP RESISTOR	D0YBR0000002	1	
R1609	CARBON RESISTOR	ERDS2TJ331T	1	
R2501	CHIP RESISTOR	D0GB102JA002	1	
R2502	CHIP RESISTOR	D0GB102JA002	1	
R2503	CHIP RESISTOR	D0GB103JA002	1	
R2504	CHIP RESISTOR	D0GB103JA002	1	
R2505	CHIP RESISTOR	D0GB392JA002	1	
R2506	CHIP RESISTOR	D0GB105JA002	1	
R2508	CHIP RESISTOR	D0GB473JA002	1	
R2509	CHIP RESISTOR	ERJ6GEYJ1R2V	1	
R2510	CHIP RESISTOR	ERJ6GEYJ1R5V	1	
R2511	CHIP RESISTOR	D0GB101JA002	1	
R2512	CHIP RESISTOR	D0GB221JA002	1	
R2513	CHIP RESISTOR	D0GB221JA002	1	
R2514	CHIP RESISTOR	D0GB221JA002	1	
R2515	CHIP RESISTOR	D0GB183JA002	1	
R2516	CHIP RESISTOR	D0GB102JA002	1	
R2517	CHIP RESISTOR	D0GB101JA002	1	
R3001	CHIP RESISTOR	D0GB152JA002	1	
R3002	CHIP RESISTOR	D0GB622JA002	1	
R3004	CHIP RESISTOR	D0GB562JA002	1	
R3005	CHIP RESISTOR	D0YBR0000002	1	
R3009	CHIP RESISTOR	D0GB153JA002	1	
R3010	CHIP RESISTOR	D0GB103JA002	1	
R3011	CHIP RESISTOR	D0GB102JA002	1	
R3012	CHIP RESISTOR	D0GB102JA002	1	
R3013	CHIP RESISTOR	D0GB273JA002	1	
R3014	CHIP RESISTOR	D0GB471JA002	1	
R3017	CHIP RESISTOR	D0GB102JA002	1	
R3027	CHIP RESISTOR	D0GB332JA002	1	
R3030	CHIP RESISTOR	D0GB106JA002	1	
R3041	CHIP RESISTOR	D0GB122JA002	1	
R4001	CHIP RESISTOR	D0GB332JA002	1	
R4002	CHIP RESISTOR	D0GB104JA002	1	
R4003	CHIP RESISTOR	D0GB223JA002	1	
R4004	CHIP RESISTOR	D0GB221JA002	1	
R4006	CHIP RESISTOR	D0GB223JA002	1	
R4007	CHIP RESISTOR	D0GB103JA002	1	
R4008	CHIP RESISTOR	D0GB334JA002	1	
R4009	CHIP RESISTOR	D0GB333JA002	1	*1,*4,*5,*6,*7,*8,*10,*11
R4009	CHIP RESISTOR	D0GB152JA002	1	
R4010	CHIP RESISTOR	D0GB103JA002	1	
R4011	CHIP RESISTOR	D0GB243JA002	1	*1,*4,*5,*6,*7,*8,*10,*11
R4011	CHIP RESISTOR	D0GB103JA002	1	
R4012	CHIP RESISTOR	D0GB821JA002	1	
R4014	CHIP RESISTOR	D0GB123JA002	1	
R4015	CHIP RESISTOR	D0GB822JA002	1	
R4016	CHIP RESISTOR	D0GB822JA002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4017	**CHIP RESISTOR**	**D0GB332JA002**	**1**	
R4018	**CHIP RESISTOR**	**D0GB472JA002**	**1**	
R4019	**CHIP RESISTOR**	**D0GB682JA002**	**1**	
R4301	**CHIP RESISTOR**	**D1BB1102A010**	**1**	
R4302	**CHIP RESISTOR**	**D1BB12020002**	**1**	
R4303	**CHIP RESISTOR**	**D1BB1102A010**	**1**	
R4304	**CHIP RESISTOR**	**D1BB12020002**	**1**	
R4305	**CHIP RESISTOR**	**D0GB622JA002**	**1**	
R4306	**CHIP RESISTOR**	**D0GB622JA002**	**1**	
R4307	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4308	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4309	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4501	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4502	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4503	**CHIP RESISTOR**	**D0GB223JA002**	**1**	
R4503	**CHIP RESISTOR**	**D0GB332JA002**	**1**	
R4504	**CHIP RESISTOR**	**D0GB223JA002**	**1**	
R4504	**CHIP RESISTOR**	**D0GB332JA002**	**1**	
R4505	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4506	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4507	**CHIP RESISTOR**	**D0GB103JA002**	**1**	
R4507	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4508	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4509	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4510	**CHIP RESISTOR**	**D0GB103JA002**	**1**	
R4510	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4511	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4512	**CHIP RESISTOR**	**D0GB562JA002**	**1**	
R4513	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4514	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4515	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4516	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4517	**CHIP RESISTOR**	**D0GB511JA002**	**1**	
R4518	**CHIP RESISTOR**	**D0GB472JA002**	**1**	
R4519	**CHIP RESISTOR**	**D0GB821JA002**	**1**	
R4520	**CHIP RESISTOR**	**D0GB124JA002**	**1**	
R4521	**CHIP RESISTOR**	**D0GB472JA002**	**1**	
R4522	**CHIP RESISTOR**	**D0GB511JA002**	**1**	
R4523	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4524	**CHIP RESISTOR**	**D0GB303JA002**	**1**	
R4525	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4526	**CHIP RESISTOR**	**D0GB102JA002**	**1**	
R4527	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4528	**CHIP RESISTOR**	**D0GB391JA002**	**1**	***6,*7**
R4530	**CHIP RESISTOR**	**D0GB104JA002**	**1**	
R4531	**CHIP RESISTOR**	**D0GB221JA002**	**1**	
R4532	**CHIP RESISTOR**	**D0GB104JA002**	**1**	
R4533	**CHIP RESISTOR**	**D0GB221JA002**	**1**	
R4534	**CHIP RESISTOR**	**D0GB622JA002**	**1**	
R4535	**CHIP RESISTOR**	**D0GB104JA002**	**1**	
R4536	**CHIP RESISTOR**	**D0GB473JA002**	**1**	
R4538	**CHIP RESISTOR**	**D0GB683JA002**	**1**	
R4539	**CHIP RESISTOR**	**D0GB473JA002**	**1**	
R4540	**CHIP RESISTOR**	**D0GB332JA002**	**1**	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4541	CHIP RESISTOR	D0GB104JA002	1	
R4549	CHIP RESISTOR	D0GB472JA002	1	
R4550	CHIP RESISTOR	D0GB683JA002	1	
R4551	CHIP RESISTOR	D0GB472JA002	1	
R4552	CHIP RESISTOR	D0GB683JA002	1	
R4553	CHIP RESISTOR	D0GB223JA002	1	
R4801	CHIP RESISTOR	D0GB122JA002	1	
R4802	CHIP RESISTOR	D0GB122JA002	1	
R4803	CHIP RESISTOR	D0GB152JA002	1	
R4804	CHIP RESISTOR	D0GB152JA002	1	
R4805	CHIP RESISTOR	D0GB562JA002	1	
R4806	CHIP RESISTOR	D0GB472JA002	1	
R4807	CHIP RESISTOR	D0GB122JA002	1	
R4808	CHIP RESISTOR	D0GB682JA002	1	
R4810	CHIP RESISTOR	D1BB75R0A010	1	
R4812	CHIP RESISTOR	D0GB681JA002	1	
R4813	CHIP RESISTOR	D0GB471JA002	1	
R4814	CHIP RESISTOR	D0GB471JA002	1	
R4901	CHIP RESISTOR	D1BB75R0A010	1	
R4902	CARBON RESISTOR	ERDS2TJ471T	1	
R4903	CHIP RESISTOR	D0GB472JA002	1	
R4904	CHIP RESISTOR	D0GB103JA002	1	
R4905	CARBON RESISTOR	ERDS2TJ331T	1	
R4906	CHIP RESISTOR	D0GB331JA002	1	
R4907	CHIP RESISTOR	D0GB183JA002	1	
R4908	CHIP RESISTOR	D1BB75R0A010	1	
R4909	CHIP RESISTOR	D0GB223JA002	1	
R4910	CHIP RESISTOR	D1BB75R0A010	1	
R4911	CHIP RESISTOR	D0GB750JA002	1	
R4912	CHIP RESISTOR	D0GB331JA002	1	
R4913	CHIP RESISTOR	D1BB75R0A010	1	
R4914	CHIP RESISTOR	D0GB750JA002	1	
R4915	CHIP RESISTOR	D1BB75R0A010	1	
R4916	CARBON RESISTOR	ERDS2TJ471T	1	
R4917	CHIP RESISTOR	D0GB223JA002	1	
R4918	CHIP RESISTOR	D0GB153JA002	1	
R4919	CHIP RESISTOR	D1BB75R0A010	1	
R4920	CHIP RESISTOR	D0GB331JA002	1	
R4921	CHIP RESISTOR	D0GB331JA002	1	
R4922	CHIP RESISTOR	D1BB75R0A010	1	
R4923	CHIP RESISTOR	D1BB75R0A010	1	
R4924	CHIP RESISTOR	D1BB30R0A010	1	
R4925	CHIP RESISTOR	D1BB75R0A010	1	
R4926	CHIP RESISTOR	D1BB30R0A010	1	
R4927	CHIP RESISTOR	ERJ3RBD132V	1	
R4928	CHIP RESISTOR	ERJ3RBD132V	1	
R4929	CHIP RESISTOR	D0GB750JA002	1	
R4930	CHIP RESISTOR	D0GB750JA002	1	
R4931	CHIP RESISTOR	D0GB750JA002	1	
R4932	CHIP RESISTOR	D0GB471JA002	1	
R4933	CHIP RESISTOR	D0GB471JA002	1	
R4934	CHIP RESISTOR	D0GB750JA002	1	
R4935	CHIP RESISTOR	D0GB331JA002	1	
R4936	CHIP RESISTOR	D0GB331JA002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4937	CHIP RESISTOR	D0GB331JA002	1	
R4938	CHIP RESISTOR	D0GB221JA002	1	
R4939	CHIP RESISTOR	D0GB331JA002	1	
R4940	CHIP RESISTOR	D0GB471JA002	1	
R4941	CHIP RESISTOR	D0GB103JA002	1	
R4942	CHIP RESISTOR	D0GB471JA002	1	
R4943	CHIP RESISTOR	D0GB104JA002	1	
R4944	CHIP RESISTOR	D0GB104JA002	1	
R4945	CHIP RESISTOR	D0GB104JA002	1	
R4946	CHIP RESISTOR	ERJ3RBD132V	1	
R4947	CHIP RESISTOR	D0GB103JA002	1	
R4948	CHIP RESISTOR	D0GB223JA002	1	
R4949	CHIP RESISTOR	D0GB223JA002	1	
R4950	CHIP RESISTOR	D0GB223JA002	1	
R4951	CHIP RESISTOR	D0GB223JA002	1	
R4952	CHIP RESISTOR	D0YBR0000002	1	
R4953	CHIP RESISTOR	ERJ3RBD132V	1	
R4954	CHIP RESISTOR	D0GB125JA002	1	
R4958	CHIP RESISTOR	D0GB221JA002	1	
R4959	CHIP RESISTOR	D0GB221JA002	1	
R4960	CHIP RESISTOR	D0GB102JA002	1	
R4961	CHIP RESISTOR	D0GB101JA002	1	
R4962	CHIP RESISTOR	D0GB101JA002	1	
R4963	CHIP RESISTOR	D0GB471JA002	1	
R4964	CHIP RESISTOR	D0GB102JA002	1	
R4965	CHIP RESISTOR	D0GB102JA002	1	
R4967	CHIP RESISTOR	D0GB103JA002	1	
R4971	CHIP RESISTOR	D1BB75R0A010	1	
R4972	CHIP RESISTOR	D0GB103JA002	1	
R4973	CHIP RESISTOR	D0GB221JA002	1	
R6002	CHIP RESISTOR	D0GB102JA002	1	
R6003	CHIP RESISTOR	D0GB101JA002	1	
R6004	CHIP RESISTOR	D0YBR0000002	1	
R6005	CHIP RESISTOR	D0GB224JA002	1	
R6006	CHIP RESISTOR	D0GB152JA002	1	
R6007	CHIP RESISTOR	D0GB473JA002	1	
R6008	CHIP RESISTOR	D0GB101JA002	1	
R6009	CHIP RESISTOR	D0GB223JA002	1	
R6010	CHIP RESISTOR	D0GB101JA002	1	
R6011	CHIP RESISTOR	D0GB221JA002	1	
R6012	CHIP RESISTOR	D0GB221JA002	1	
R6013	CHIP RESISTOR	D0GB221JA002	1	
R6014	CHIP RESISTOR	D0GB221JA002	1	
R6015	CHIP RESISTOR	D0GB241JA002	1	
R6017	CHIP RESISTOR	D0GB102JA002	1	
R6019	CHIP RESISTOR	D0GB103JA002	1	
R6020	CHIP RESISTOR	D0GB273JA002	1	
R6021	CHIP RESISTOR	D0GB273JA002	1	
R6022	CHIP RESISTOR	D0GB101JA002	1	
R6023	CHIP RESISTOR	D0GB273JA002	1	
R6025	CHIP RESISTOR	D0GB433JA002	1	
R6026	CHIP RESISTOR	D0GB393JA002	1	
R6031	CHIP RESISTOR	D0GB682JA002	1	
R6038	CHIP RESISTOR	D0GB101JA002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R6039	CHIP RESISTOR	D0GB102JA002	1	
R6040	CHIP RESISTOR	D0GB102JA002	1	
R6041	CHIP RESISTOR	D0GB102JA002	1	
R6046	CHIP RESISTOR	D0GB472JA002	1	
R6047	CHIP RESISTOR	D0GB472JA002	1	
R6048	CHIP RESISTOR	D0GB472JA002	1	
R6049	CHIP RESISTOR	D0GB221JA002	1	
R6052	CHIP RESISTOR	D0GB221JA002	1	
R6071	CHIP RESISTOR	D0GB183JA002	1	
R6077	CHIP RESISTOR	D0GB105JA002	1	
R6078	CHIP RESISTOR	D0GB471JA002	1	
R6079	CHIP RESISTOR	D0GB471JA002	1	
R6080	CHIP RESISTOR	D0GB471JA002	1	
R6084	CHIP RESISTOR	D0YBR0000002	1	
R6085	CHIP RESISTOR	D0GB472JA002	1	
R6086	CHIP RESISTOR	D0GB103JA002	1	
R6087	CHIP RESISTOR	D0GB102JA002	1	
R6088	CHIP RESISTOR	D0GB103JA002	1	
R6089	CHIP RESISTOR	D0GB272JA002	1	*1,*2,*3,*4,*5,*6,*7,*8,*9
R6090	CHIP RESISTOR	D0GB103JA002	1	
R6091	CHIP RESISTOR	D0GB562JA002	1	
R6092	CHIP RESISTOR	D0GB472JA002	1	
R6102	CHIP RESISTOR	D0GB222JA002	1	
R6105	CHIP RESISTOR	D0GB473JA002	1	
R6106	CHIP RESISTOR	D0GB103JA002	1	
R6107	CHIP RESISTOR	D0GB103JA002	1	
R6108	CHIP RESISTOR	D0GB103JA002	1	
R6109	CHIP RESISTOR	D0GB683JA002	1	
R6113	CHIP RESISTOR	D0GB103JA002	1	
R6114	CHIP RESISTOR	D0GB122JA002	1	
R6114	CHIP RESISTOR	D0YBR0000002	1	
R6115	CHIP RESISTOR	D0GB103JA002	1	
R6116	CHIP RESISTOR	D0GB472JA002	1	
R6117	CHIP RESISTOR	D0GB103JA002	1	
R6118	CHIP RESISTOR	D0GB153JA002	1	
R6119	CHIP RESISTOR	D0GB103JA002	1	
R6120	CHIP RESISTOR	D0GB103JA002	1	
R6121	CHIP RESISTOR	D0GB103JA002	1	
R6122	CHIP RESISTOR	D0GB103JA002	1	
R6123	CHIP RESISTOR	D0GB103JA002	1	
R6124	CHIP RESISTOR	D0GB103JA002	1	
R6125	CHIP RESISTOR	D0GB103JA002	1	
R6126	CHIP RESISTOR	D0GB103JA002	1	
R7301	CHIP RESISTOR	D0GB912JA002	1	*2,*3,*9,*12
R7302	CHIP RESISTOR	D0YBR0000002	1	
R7302	CHIP RESISTOR	D0GB122JA002	1	
R7303	CHIP RESISTOR	D0YBR0000002	1	
R7304	CHIP RESISTOR	D0YBR0000002	1	
R7305	CHIP RESISTOR	D0GB101JA002	1	
R7306	CHIP RESISTOR	D0GB101JA002	1	
R7307	CHIP RESISTOR	D0GB562JA002	1	
R7308	CHIP RESISTOR	D0GB221JA002	1	
R7309	CHIP RESISTOR	D0GB273JA002	1	
R7310	CHIP RESISTOR	D0YBR0000002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7310	CHIP RESISTOR	D0GB472JA002	1	
R7311	CHIP RESISTOR	D0GB752JA002	1	
R7312	CHIP RESISTOR	D0YBR0000002	1	
R7312	CHIP RESISTOR	D0GB472JA002	1	
R7316	CHIP RESISTOR	D0GB103JA002	1	
R7328	CHIP RESISTOR	D0GB221JA002	1	
R7328	CHIP RESISTOR	D0GB822JA002	1	
R7329	CHIP RESISTOR	D0GB221JA002	1	
R7329	CHIP RESISTOR	D0GB822JA002	1	
R7501	CARBON RESISTOR	ERDS2TJ3R3T	1	
R7503	CHIP RESISTOR	D0GB103JA002	1	
R7504	CARBON RESISTOR	ERDS2TJ471T	1	
R7520	CHIP RESISTOR	D0GB122JA002	1	
R7521	CHIP RESISTOR	D0GB122JA002	1	
R7523	CHIP RESISTOR	D0GB152JA002	1	
R7525	CHIP RESISTOR	D0GB562JA002	1	
R7526	CHIP RESISTOR	D0GB472JA002	1	
R7534	CHIP RESISTOR	D0GB181JA002	1	
R7535	CHIP RESISTOR	D0GB103JA002	1	
R7603	CHIP RESISTOR	D0YBR0000002	1	
R7605	CHIP RESISTOR	D0GB101JA002	1	
R7606	CHIP RESISTOR	D0YBR0000002	1	
R7607	CHIP RESISTOR	D0GB471JA002	1	
R7608	CHIP RESISTOR	D0GB101JA002	1	
R7614	CHIP RESISTOR	D0YBR0000002	1	
R8001	CHIP RESISTOR	D0GB102JA002	1	
R8002	CHIP RESISTOR	D0GB153JA002	1	
R8007	CHIP RESISTOR	D0GB152JA002	1	
R8008	CHIP RESISTOR	D0GB222JA002	1	
R8010	CHIP RESISTOR	D0GB102JA002	1	
R8012	CHIP RESISTOR	D0GB560JA002	1	
R8013	CHIP RESISTOR	D0GB560JA002	1	
R8014	CHIP RESISTOR	D0GB560JA002	1	
R8015	CHIP RESISTOR	D0GB560JA002	1	
R8016	CHIP RESISTOR	D0GB560JA002	1	
R8017	CHIP RESISTOR	D0GB560JA002	1	
R8018	CHIP RESISTOR	D0GB560JA002	1	
R8019	CHIP RESISTOR	D0GB560JA002	1	
R8020	CHIP RESISTOR	D0GB560JA002	1	
R8021	CHIP RESISTOR	D0GB560JA002	1	
R8022	CHIP RESISTOR	D0GB220JA002	1	
R8023	CHIP RESISTOR	D0GB100JA002	1	
R8024	CHIP RESISTOR	D0YBR0000002	1	
R8025	CHIP RESISTOR	D0YBR0000002	1	
R8034	CHIP RESISTOR	D0GB473JA002	1	
R8035	CHIP RESISTOR	D0GB473JA002	1	
R8040	CHIP RESISTOR	D0GB220JA002	1	
R8041	CHIP RESISTOR	D0GB220JA002	1	
R8042	CHIP RESISTOR	D0GB153JA002	1	
R8043	CHIP RESISTOR	D0GB472JA002	1	
R8044	CHIP RESISTOR	D0GB472JA002	1	
R8045	CHIP RESISTOR	D0GB472JA002	1	
R8046	CHIP RESISTOR	D0GB472JA002	1	
R8047	CHIP RESISTOR	D0GB472JA002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R8048	CHIP RESISTOR	D0GB472JA002	1	
R8049	CHIP RESISTOR	D0GB472JA002	1	
R8050	CHIP RESISTOR	D0GB101JA002	1	
R8051	CHIP RESISTOR	D0GB102JA002	1	
R8053	CHIP RESISTOR	D0GB560JA002	1	
R8054	CHIP RESISTOR	D0GB560JA002	1	
R8055	CHIP RESISTOR	D0GB102JA002	1	
R8056	CHIP RESISTOR	D0GB102JA002	1	
R8057	CHIP RESISTOR	D0GB2R2JA002	1	
R8058	CHIP RESISTOR	D0GB2R2JA002	1	
R8059	CHIP RESISTOR	D0GB331JA002	1	
R8060	CHIP RESISTOR	D0GB331JA002	1	
R8062	CHIP RESISTOR	D0YBR0000002	1	
R8063	CHIP RESISTOR	D0YBR0000002	1	
R8064	CHIP RESISTOR	D0GB221JA002	1	
R8065	CHIP RESISTOR	D0GB222JA002	1	
R8066	CHIP RESISTOR	D0YBR0000002	1	
R8067	CHIP RESISTOR	D0GB103JA002	1	
R8070	CHIP RESISTOR	D0GB103JA002	1	
R8071	CHIP RESISTOR	D0GB103JA002	1	
R8074	CHIP RESISTOR	D0GB100JA002	1	
R8075	CHIP RESISTOR	D0GB820JA002	1	
R8076	CHIP RESISTOR	D0GB820JA002	1	
R8078	CHIP RESISTOR	D0GB822JA002	1	
R8079	CHIP RESISTOR	D0GB822JA002	1	
R8080	CHIP RESISTOR	D0GB105JA002	1	
R8081	CHIP RESISTOR	D0GB271JA002	1	
R8091	CHIP RESISTOR	D0GB473JA002	1	
R8094	CHIP RESISTOR	D0GB510JA002	1	
R8095	CHIP RESISTOR	D0GB510JA002	1	
R8101	CHIP RESISTOR	D0GB470JA002	1	
R8102	CHIP RESISTOR	D0GB751JA002	1	
R8103	CHIP RESISTOR	D0GB681JA002	1	
R8104	CHIP RESISTOR	D0GB202JA002	1	
R8201	CHIP RESISTOR	D0GB823JA002	1	
R8202	CHIP RESISTOR	D0GB823JA002	1	
R8203	CHIP RESISTOR	D0GB153JA002	1	
R8204	CHIP RESISTOR	D0GB472JA002	1	
R8205	CHIP RESISTOR	D0GB472JA002	1	
R8206	CHIP RESISTOR	D0GB473JA002	1	
R8207	CHIP RESISTOR	D0GB473JA002	1	
R8208	CHIP RESISTOR	D0GB473JA002	1	
R8209	CHIP RESISTOR	D0GB473JA002	1	
R8210	CHIP RESISTOR	ERJ6GEYJ6R8V	1	
R8211	CHIP RESISTOR	D0GB222JA002	1	
R8212	CHIP RESISTOR	D0GB222JA002	1	
R8213	CHIP RESISTOR	D0GB682JA002	1	
R8219	CHIP RESISTOR	D0GB752JA002	1	
R8220	CHIP RESISTOR	D0GB752JA002	1	
R8321	CHIP RESISTOR	ERJ3RBD393V	1	
R8322	CHIP RESISTOR	ERJ3RBD132V	1	
R8323	CHIP RESISTOR	ERJ3RBD242V	1	
R8324	CHIP RESISTOR	ERJ3RBD201V	1	
R8325	CHIP RESISTOR	ERJ3RBD101V	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R8326	CHIP RESISTOR	ERJ3RBD101V	1	
R8327	CHIP RESISTOR	ERJ3RBD201V	1	
R8328	CHIP RESISTOR	D0GB512JA002	1	
R8329	CHIP RESISTOR	D0GB304JA002	1	
R8330	CHIP RESISTOR	D0GB512JA002	1	
R8407	CHIP RESISTOR	D0GB221JA002	1	
R8413	CHIP RESISTOR	D0GB101JA002	1	
R8414	CHIP RESISTOR	D0GB101JA002	1	
R8415	CHIP RESISTOR	D0GB101JA002	1	
R8416	CHIP RESISTOR	D0YBR0000002	1	
RA8001	RESISTOR ARRAY	D1H88204A024	1	
RA8002	RESISTOR ARRAY	D1H88204A024	1	
RA8003	RESISTOR ARRAY	D1H88204A024	1	
RA8004	RESISTOR ARRAY	D1H88204A024	1	
RA8005	RESISTOR ARRAY	D1H88204A024	1	
RA8006	RESISTOR ARRAY	D1H88204A024	1	
RA8007	RESISTOR ARRAY	D1H88204A024	1	
RA8401	RESISTOR ARRAY	D1H88204A024	1	
S1501	MODE SWITCH	K0ZZ00000598	1	
S4802	TOUCH SWITCH	EVQ11L07B	1	
S4803	TOUCH SWITCH	EVQ11L07B	1	
S4804	TOUCH SWITCH	EVQ11L07B	1	
S4805	TOUCH SWITCH	EVQ11L07B	1	
S4806	TOUCH SWITCH	EVQ11L07B	1	
S4807	TOUCH SWITCH	EVQ11L07B	1	
S4808	TOUCH SWITCH	EVQ11L07B	1	
S4809	TOUCH SWITCH	EVQ11L07B	1	
S4810	TOUCH SWITCH	EVQ11L07B	1	
S4811	TOUCH SWITCH	EVQ11L07B	1	
S7501	TOUCH SWITCH	EVQ11L07B	1	
S7503	TOUCH SWITCH	EVQ11L07B	1	
S7504	TOUCH SWITCH	EVQ11L07B	1	
S7506	TOUCH SWITCH	EVQ11L07B	1	
S7507	SAFETY TAB SWITCH	K0C111A00006	1	
S7508	TOUCH SWITCH	EVQ11L07B	1	
T1150	TRANSFORMER	ETS29AZ2H6AC	1	⚠
T4001	BIAS TRANSFORMER	G2A362C00003	1	
W501	CHIP RESISTOR	D0YDR0000006	1	
W502	CHIP RESISTOR	D0YBR0000002	1	
W504	CHIP RESISTOR	D0YBR0000002	1	
W505	CHIP RESISTOR	D0YBR0000002	1	
W506	CHIP RESISTOR	D0YBR0000002	1	
W509	CHIP RESISTOR	D0YBR0000002	1	
W510	CHIP RESISTOR	D0YBR0000002	1	
W511	CHIP RESISTOR	D0YBR0000002	1	
W512	CHIP RESISTOR	D0YDR0000006	1	
W513	CHIP RESISTOR	D0YBR0000002	1	
W514	CHIP RESISTOR	D0YBR0000002	1	
W515	CHIP RESISTOR	D0YBR0000002	1	
W516	CHIP RESISTOR	D0YBR0000002	1	
W517	CHIP RESISTOR	D0YDR0000006	1	
W518	CHIP RESISTOR	D0YBR0000002	1	
W519	CHIP RESISTOR	D0YDR0000006	1	
W520	CHIP RESISTOR	D0YDR0000006	1	

[illegible]	[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W521	CHIP RESISTOR	D0YBR0000002	1	
W522	CHIP RESISTOR	D0YBR0000002	1	
W523	CHIP RESISTOR	D0YBR0000002	1	
W524	CHIP RESISTOR	D0YBR0000002	1	
W525	CHIP RESISTOR	D0YBR0000002	1	
W526	CHIP RESISTOR	D0YBR0000002	1	
W527	CHIP RESISTOR	D0YBR0000002	1	
W528	CHIP RESISTOR	D0YBR0000002	1	
W529	CHIP RESISTOR	D0YBR0000002	1	
W530	CHIP RESISTOR	D0YBR0000002	1	
W531	CHIP RESISTOR	D0YBR0000002	1	
W532	CHIP RESISTOR	D0YDR0000006	1	
W533	CHIP RESISTOR	D0YDR0000006	1	
W534	CHIP RESISTOR	D0YBR0000002	1	
W535	CHIP RESISTOR	D0YBR0000002	1	
W536	CHIP RESISTOR	D0YBR0000002	1	
W537	CHIP RESISTOR	D0YBR0000002	1	
W538	CHIP RESISTOR	D0YBR0000002	1	
W539	CHIP RESISTOR	D0YBR0000002	1	
W540	CHIP RESISTOR	D0YBR0000002	1	
W541	CHIP RESISTOR	D0YBR0000002	1	
W542	CHIP RESISTOR	D0YBR0000002	1	
W543	CHIP RESISTOR	D0YBR0000002	1	
W544	CHIP RESISTOR	D0YBR0000002	1	
W545	CHIP RESISTOR	D0YBR0000002	1	
W546	CHIP RESISTOR	D0YBR0000002	1	
W547	CHIP RESISTOR	D0YBR0000002	1	
W548	CHIP RESISTOR	D0YBR0000002	1	
W549	CHIP RESISTOR	D0YBR0000002	1	
W550	CHIP RESISTOR	D0YBR0000002	1	
W551	CHIP RESISTOR	D0YBR0000002	1	
W552	CHIP RESISTOR	D0YBR0000002	1	
W553	CHIP RESISTOR	D0YBR0000002	1	
W554	CHIP RESISTOR	D0YBR0000002	1	
W555	CHIP RESISTOR	D0YBR0000002	1	
W557	CHIP RESISTOR	D0YDR0000006	1	
W558	CHIP RESISTOR	D0YBR0000002	1	
W559	CHIP RESISTOR	D0YBR0000002	1	
W560	CHIP RESISTOR	D0YBR0000002	1	
W561	CHIP RESISTOR	D0YDR0000006	1	
W562	CHIP RESISTOR	D0YDR0000006	1	
W563	CHIP RESISTOR	D0YDR0000006	1	
W564	CHIP RESISTOR	D0YBR0000002	1	
W565	CHIP RESISTOR	D0YBR0000002	1	
W566	CHIP RESISTOR	D0YDR0000006	1	
W567	CHIP RESISTOR	D0YDR0000006	1	
W568	CHIP RESISTOR	D0YBR0000002	1	
W569	CHIP RESISTOR	D0YBR0000002	1	
W570	CHIP RESISTOR	D0YBR0000002	1	
W571	CHIP RESISTOR	D0YBR0000002	1	
W572	CHIP RESISTOR	D0YBR0000002	1	
W573	CHIP RESISTOR	D0YBR0000002	1	
W574	CHIP RESISTOR	D0YBR0000002	1	
W575	CHIP RESISTOR	D0YBR0000002	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W576	CHIP RESISTOR	D0YBR0000002	1	
W577	CHIP RESISTOR	D0YBR0000002	1	
W578	CHIP RESISTOR	D0YDR0000006	1	
W579	CHIP RESISTOR	D0YDR0000006	1	
W580	CHIP RESISTOR	D0YDR0000006	1	
W581	CHIP RESISTOR	D0YBR0000002	1	
W582	CHIP RESISTOR	D0YBR0000002	1	
W583	CHIP RESISTOR	D0YBR0000002	1	
W584	CHIP RESISTOR	D0YBR0000002	1	
W585	CHIP RESISTOR	D0YBR0000002	1	
W587	CHIP RESISTOR	D0YBR0000002	1	
W588	CHIP RESISTOR	D0YDR0000006	1	
W589	CHIP RESISTOR	D0YBR0000002	1	
W590	CHIP RESISTOR	D0YBR0000002	1	
W591	CHIP RESISTOR	D0YBR0000002	1	
W592	CHIP RESISTOR	D0YBR0000002	1	
W593	CHIP RESISTOR	D0YBR0000002	1	
W594	CHIP RESISTOR	D0YBR0000002	1	
W595	CHIP RESISTOR	D0YBR0000002	1	
W596	CHIP RESISTOR	D0YBR0000002	1	
W597	CHIP RESISTOR	D0YBR0000002	1	
W598	CHIP RESISTOR	D0YBR0000002	1	
W599	CHIP RESISTOR	D0YBR0000002	1	
W600	CHIP RESISTOR	D0YBR0000002	1	
W601	CHIP RESISTOR	D0YBR0000002	1	
W602	CHIP RESISTOR	D0YBR0000002	1	
X3001	CRYSTAL OSCILLATOR	H0D443400040	1	
X6001	CRYSTAL OCSILLATOR	H0A120500004	1	
X6002	CRYSTAL OSCILLATOR	H0A327200101	1	
X6101	CERAMIC OSCILLATOR	H2D800400009	1	
X7301	CRYSTAL OSCILLATOR	H0D245500016	1	*1,*4,*5,*6,*7,*8,*10,*11
X7301	CRYSTAL OSCILLATOR	H0H400400006	1	*2,*3,*9,*12
X8001	CRYSTAL OSCILLATOR	H0J270500066	1	
ZA1103	FUSE HOLDER	EYF52BCY	1	
ZA1104	FUSE HOLDER	EYF52BCY	1	
ZJ1001	EARTH ANGLE	K9ZZ00000424	1	

21.7. Differences between / REPD0010x and REPD0024x

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C6029	CHIP CAPACITOR	F1H1A105A004	1	deleted
C6038	CHIP CAPACITOR	F1H1E104A030	1	deleted
C6039	CHIP CAPACITOR	F1J1A105A003	1	deleted
C6040	CHIP CAPACITOR	F1H1E104A030	1	deleted
C6041	CHIP CAPACITOR	ECJ2YB0J475K	1	deleted
C6042	CHIP CAPACITOR	ECJ1VB1C563K	1	deleted
IC6006	INTEGRATED CIRCUIT	C1AB00002140	1	deleted
R6038	CHIP RESISTOR	D0GB101JA002	1	deleted
R6052	CHIP RESISTOR	D0GB221JA002	1	deleted
R6085	CHIP RESISTOR	D0GB472JA002	1	deleted
R6086	CHIP RESISTOR	D0GB103JA002	1	deleted
R6087	CHIP RESISTOR	D0GB102JA002	1	deleted
R6088	CHIP RESISTOR	D0GB103JA002	1	deleted
R6089	CHIP RESISTOR	D0GB272JA002	1	deleted
R6090	CHIP RESISTOR	D0GB103JA002	1	deleted
R6091	CHIP RESISTOR	D0GB562JA002	1	deleted
R6092	CHIP RESISTOR	D0GB472JA002	1	deleted
IC6003	INTEGRATED CIRCUIT	C1AB00001293	1	added
C6027	CHIP CAPACITOR	F1H1C333A041	1	added
C6028	CHIP CAPACITOR	F1H1H222A219	1	added
C6045	CHIP CAPACITOR	F1H1H1510001	1	added
C6046	CHIP CAPACITOR	ECJ1VF1C474Z	1	added
C6047	CHIP CAPACITOR	F1H1E104A030	1	added
LB6002	CHIP RESISTOR	D0YBR0000002	1	added
LB6003	CHIP RESISTOR	D0YBR0000002	1	added
R6051	CHIP RESISTOR	D0GB564JA002	1	added
R6053	CHIP RESISTOR	D0GB682JA002	1	added
R6054	CHIP RESISTOR	D0GB125JA002	1	added
R6055	CHIP RESISTOR	D0GB682JA002	1	added
R6056	CHIP RESISTOR	D0GB125JA002	1	added
R6057	CHIP RESISTOR	D0GB104JA002	1	added
R6082	CHIP RESISTOR	D0GB121JA002	1	added
R6083	CHIP RESISTOR	D0GB103JA002	1	added
R6095	CHIP RESISTOR	D0GB222JA002	1	added
R6096	CHIP RESISTOR	D0GB221JA002	1	added
R6015	CHIP RESISTOR	D0GB121JA002	1	changed

22. DIAGRAMS FOR PRINTING A4 SIZE

22.1. BLOCK DIAGRAMMS FOR PRINTING A4 SIZE

22.2. SCHEMATIC DIAGRAMS FOR PRINTING A4 SIZE

22.3. MAIN PCB (COMPONENT SIDE) FOR PRINTING A4 SIZE

22.4. MAIN PCB (SOLDER SIDE) FOR PRINTING A4 SIZE

22.5. MAIN PCB (COMPONENT SIDE - REPD0024x) A4 SIZE

22.6. MAIN PCB (SOLDER SIDE - REPD0024x) A4 SIZE

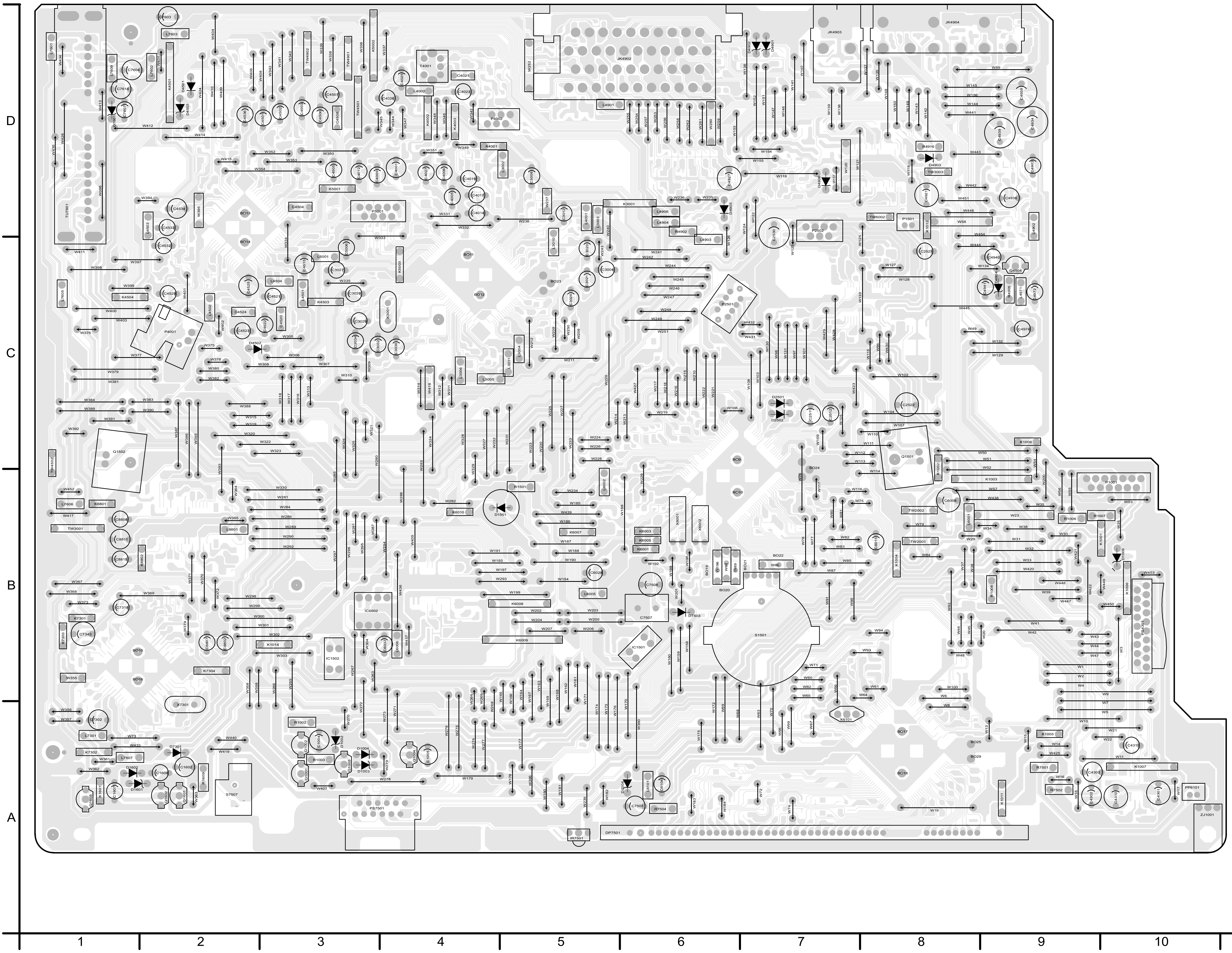
22.7. DECODER PCB FOR PRINTING A4 SIZE

22.8. POWER PCB FOR PRINTING A4 SIZE

22.9. FRONT PCB FOR PRINTING A4 SIZE

22.10. TERMINAL PCB FOR PRINTING A4 SIZE

(REPD0024A: NV-VP28EG / NV-VP33EG) (REPD0024B: NV-VP28EC / NV-VP33EC) (REPD0024C: NV-VP33EB) (REPD0024D: NV-VP33EBL) (REPD0024E: NV-VP33EP)

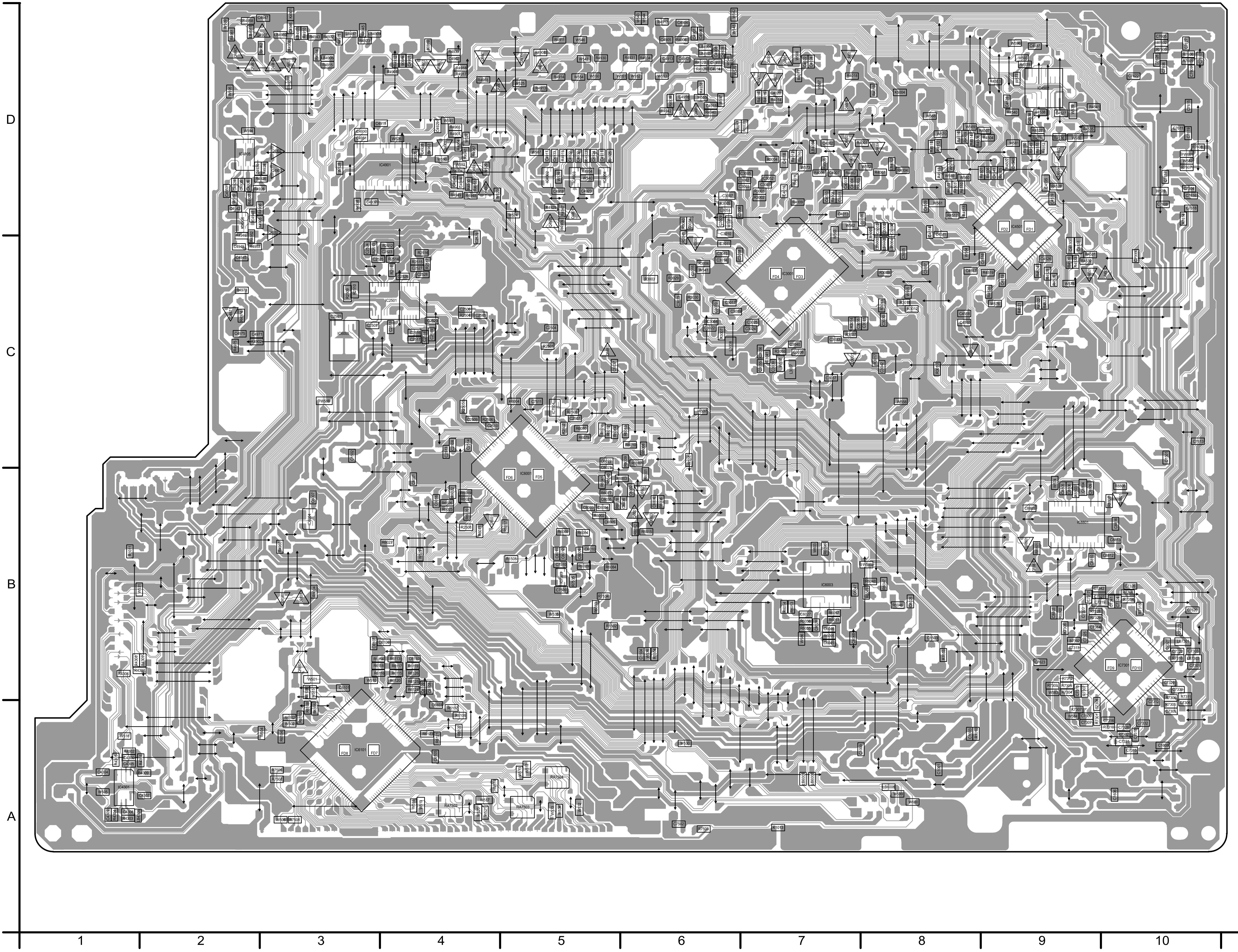

D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
JK4902
JK4903
JK4904
TU7601
Q1502
Q1501
P4001
P2501
P1001
P5001
S1501
IC1501
IC1502
IC6002
PS7501
PS4301
DP7501
S7507
D1501
C7507

MAIN PCB	
IC1501	B6
IC1502	B3
IC6002	B3
JK4902	D5
JK4903	D7
JK4904	D8
Q1001	A3
Q1002	A3
Q1003	A3
Q1004	A4
Q1501	C8
Q1502	C1
Q1601	A2
Q1602	A2
Q1603	A1
Q4904	C9
P1001	B9
P1501	D8
P2501	C6
P2502	D7
P4001	C2
P4002	D5
P5001	D3
PS4301	B10
PS7501	A3
DP 7501	A6
PP6101	A10
X3001	C4
X6001	B6
X6002	B6
X6101	A7
X7301	A2
S1501	B7
S7507	A2
TW2001	B8
TW2002	B8
TW3001	B1
TW3003	D8
TW4501	D4
TW4501	D3
TW4502	C1
TW4901	D3
TW4902	D3
TW6002	D8
TU7601	D1

ADRESS INFORMATION

NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
COMPONENT SIDE

(REPD0024A: NV-VP28EG / NV-VP33EG) (REPD0024B: NV-VP28EC / NV-VP33EC) (REPD0024C: NV-VP33EB) (REPD0024D: NV-VP33EBL) (REPD0024E: NV-VP33EP)

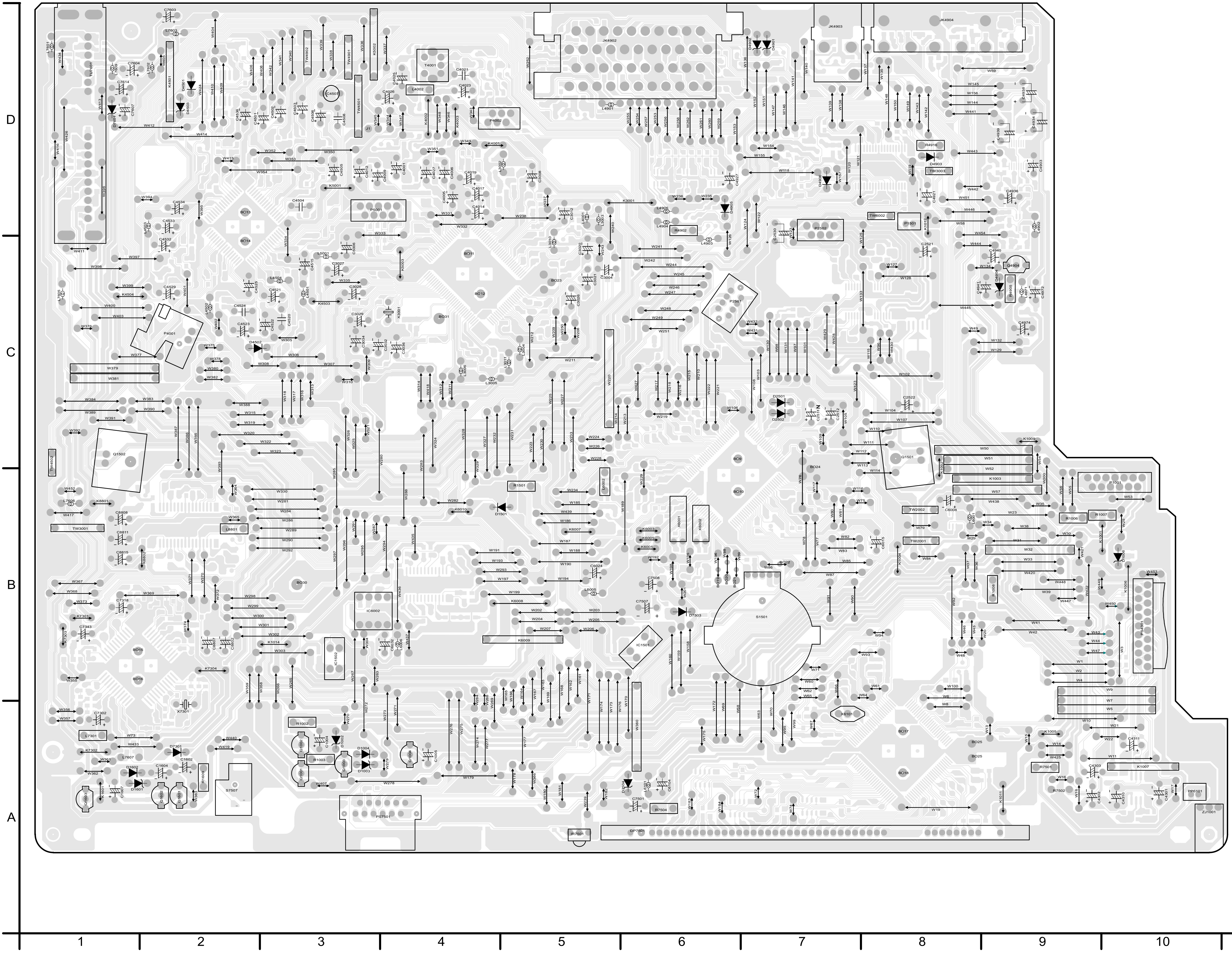

D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
IC4901
IC2501
IC6005
IC3001
IC4501
IC6001
IC6003
IC6101
IC4301
IC7301
IC8801
RA7502
RA7503
RA7504

MAIN PCB			
IC 2501	C4	QR 1001	B3
IC 3001	C7	QR 1002	B3
IC 4301	A1	QR 3006	C6
IC 4501	C9	QR 4001	D7
IC 4901	D4	QR 4002	D7
IC 4902	D5	QR 4003	D7
IC 4903	D5	QR 4004	D8
IC 4904	D5	QR 4005	D7
IC 4905	D2	QR 4501	C9
IC 6001	B5	QR 4502	D9
IC 6003	B7	QR 4503	C10
IC 6004	B3	QR 4504	D9
IC 6005	C3	QR 4505	C8
IC 6101	A3	QR 4901	D4
IC 7301	B10	QR 4902	D4
IC 7503	B5	QR 4903	D4
IC 7504	C5	QR 4904	D5
IC 8801	B9	QR 4905	D2
Q 3001	C7	QR 4906	D4
Q 4003	D7	QR 4907	D3
Q 4004	D7	QR 4908	D2
Q 4005	D7	QR 4909	D6
Q 4006	D7	QR 4910	D6
Q 4901	C5	QR 4911	D4
Q 4902	D3	QR 4912	D4
Q 4903	D3	QR 4913	D4
Q 4905	C5	QR 6001	B4
Q 4906	D5	QR 6101	B3
Q 4907	D3	QR 8801	B9
Q 4908	D3	QR 8802	B9
Q 4909	D4	RA 7502	A4
Q 4910	C3	RA 7503	A5
Q 4971	C2	RA 7504	A5
Q 6001	B6		
Q 6002	B6		
Q 6003	B6		
Q 8801	B10		

ADRESS INFORMATION

NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
SOLDER SIDE

(REPD0010A: NV-VP28EG / NV-VP33EG) (REPD0010B: NV-VP28EC / NV-VP33EC) (REPD0010C: NV-VP33EB) (REPD0010D: NV-VP33EBL) (REPD0010E: NV-VP33EP)
(REPD0010F: NV-VP23EG) (REPD0010G: NV-VP23EC) (REPD0010J: NV-VP23EP)

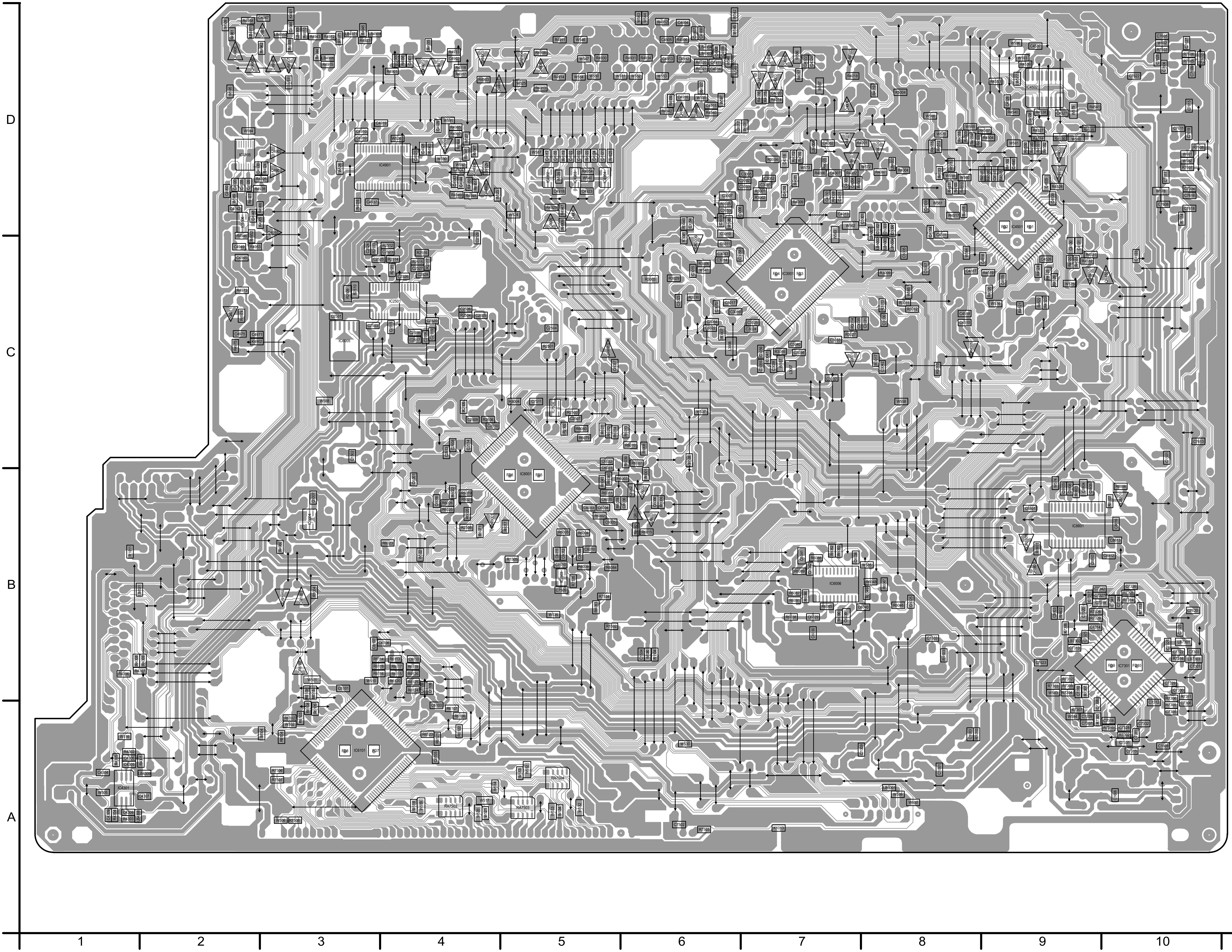

D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
JK4902
JK4903
JK4904
T4001
P4001
P4002
P5001
P2501
P2502
P1001
Q1501
Q1502
Q4904
IC1501
IC1502
IC6002
S1501
S7507
PS7501
PS4301
DP7501
PP6101
X3001
X6101
X7301
TW3001
TW2001
TW2002
TW6002
TW3003
ZJ1001

MAIN PCB	
IC1501	B6
IC1502	B3
IC6002	B3
JK4902	D5
JK4903	D7
JK4904	D8
Q1001	A3
Q1002	A3
Q1003	A3
Q1004	A4
Q1501	C8
Q1502	C1
Q1601	A2
Q1602	A2
Q1603	A1
Q4904	C9
P1001	B9
P1501	D8
P2501	C6
P2502	D7
P4001	C2
P4002	D5
P5001	D3
PS4301	B10
PS7501	A3
DP 7501	A6
PP6101	A10
X3001	C4
X6001	B6
X6002	B6
X6101	A7
X7301	A2
S1501	B7
S7507	A2
TW2001	B8
TW2002	B8
TW3001	B1
TW3003	D8
TW4501	D4
TW4501	D3
TW4502	C1
TW4901	D3
TW4902	D3
TW6002	D8
TU7601	D1

ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
COMPONENT SIDE

(REPD0010A: NV-VP28EG / NV-VP33EG) (REPD0010B: NV-VP28EC / NV-VP33EC) (REPD0010C: NV-VP33EB) (REPD0010D: NV-VP33EBL) (REPD0010E: NV-VP33EP)
(REPD0010F: NV-VP23EG) (REPD0010G: NV-VP23EC) (REPD0010J: NV-VP23EP)



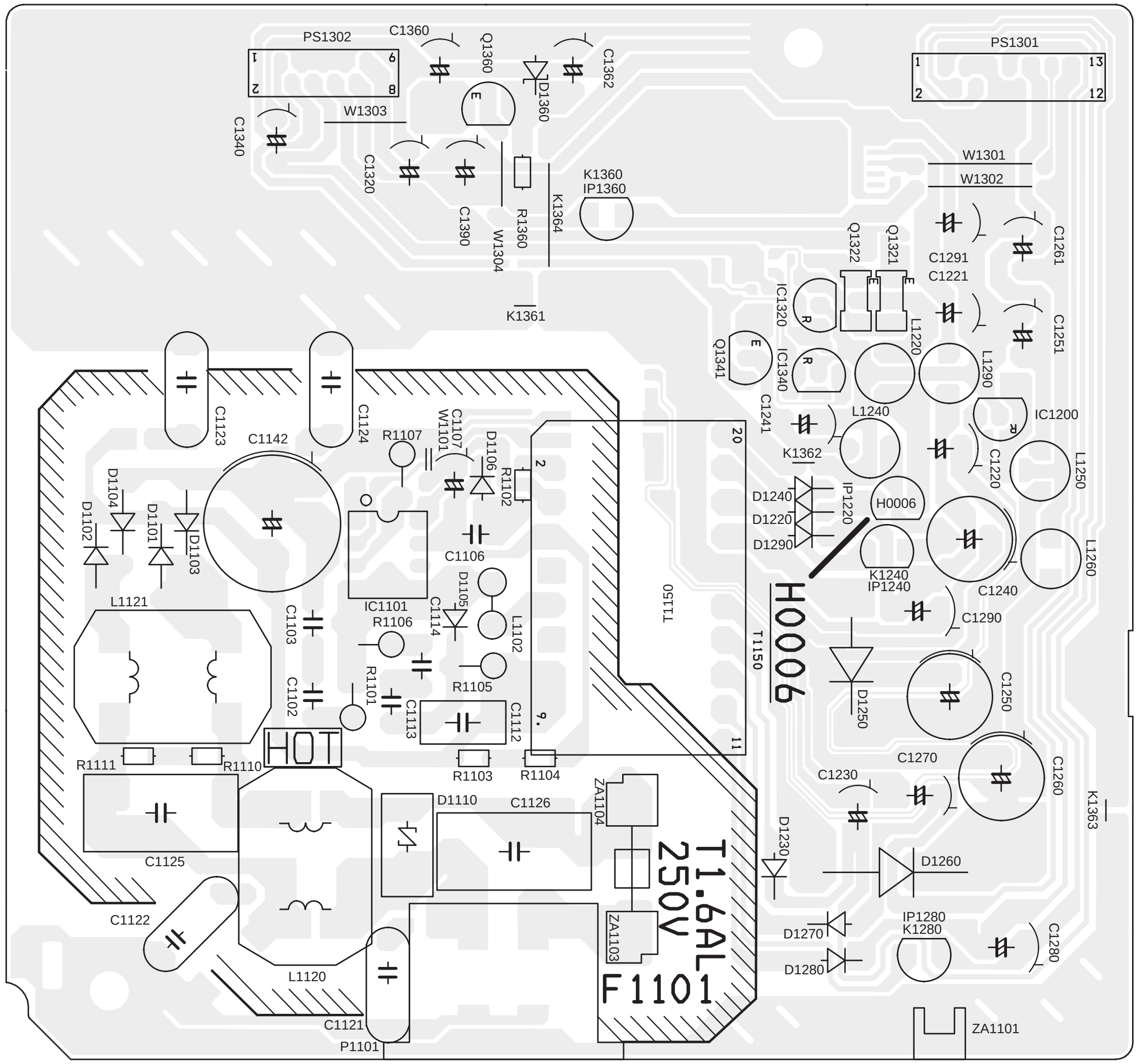
MAIN PCB			
IC 2501	C4	QR 1001	B3
IC 3001	C7	QR 1002	B3
IC 4301	A1	QR 3006	C6
IC 4501	C9	QR 4001	D7
IC 4901	D4	QR 4002	D7
IC 4902	D5	QR 4003	D7
IC 4903	D5	QR 4004	D8
IC 4904	D5	QR 4005	D7
IC 4905	D2	QR 4501	C9
IC 6001	B5	QR 4502	D9
IC 6004	B3	QR 4503	C10
IC 6005	C3	QR 4504	D9
IC 6006	B7	QR 4505	C8
IC 6101	A3	QR 4901	D4
IC 7301	B10	QR 4902	D4
IC 7503	B5	QR 4903	D4
IC 7504	C5	QR 4904	D5
IC 8801	B9	QR 4905	D2
Q 3001	C7	QR 4906	D4
Q 4003	D7	QR 4907	D3
Q 4004	D7	QR 4908	D2
Q 4005	D7	QR 4909	D6
Q 4006	D7	QR 4910	D6
Q 4901	C5	QR 4911	D4
Q 4902	D3	QR 4912	D4
Q 4903	D3	QR 4913	D4
Q 4905	C5	QR 6001	B4
Q 4906	D5	QR 6101	B3
Q 4907	D3	QR 8801	B9
Q 4908	D3	QR 8802	B9
Q 4909	D4	RA 7502	A4
Q 4910	C3	RA 7503	A5
Q 4971	C2	RA 7504	A5
Q 6001	B6		
Q 6002	B6		
Q 6003	B6		
Q 8801	B10		

ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
SOLDER SIDE

(REPD0012A)

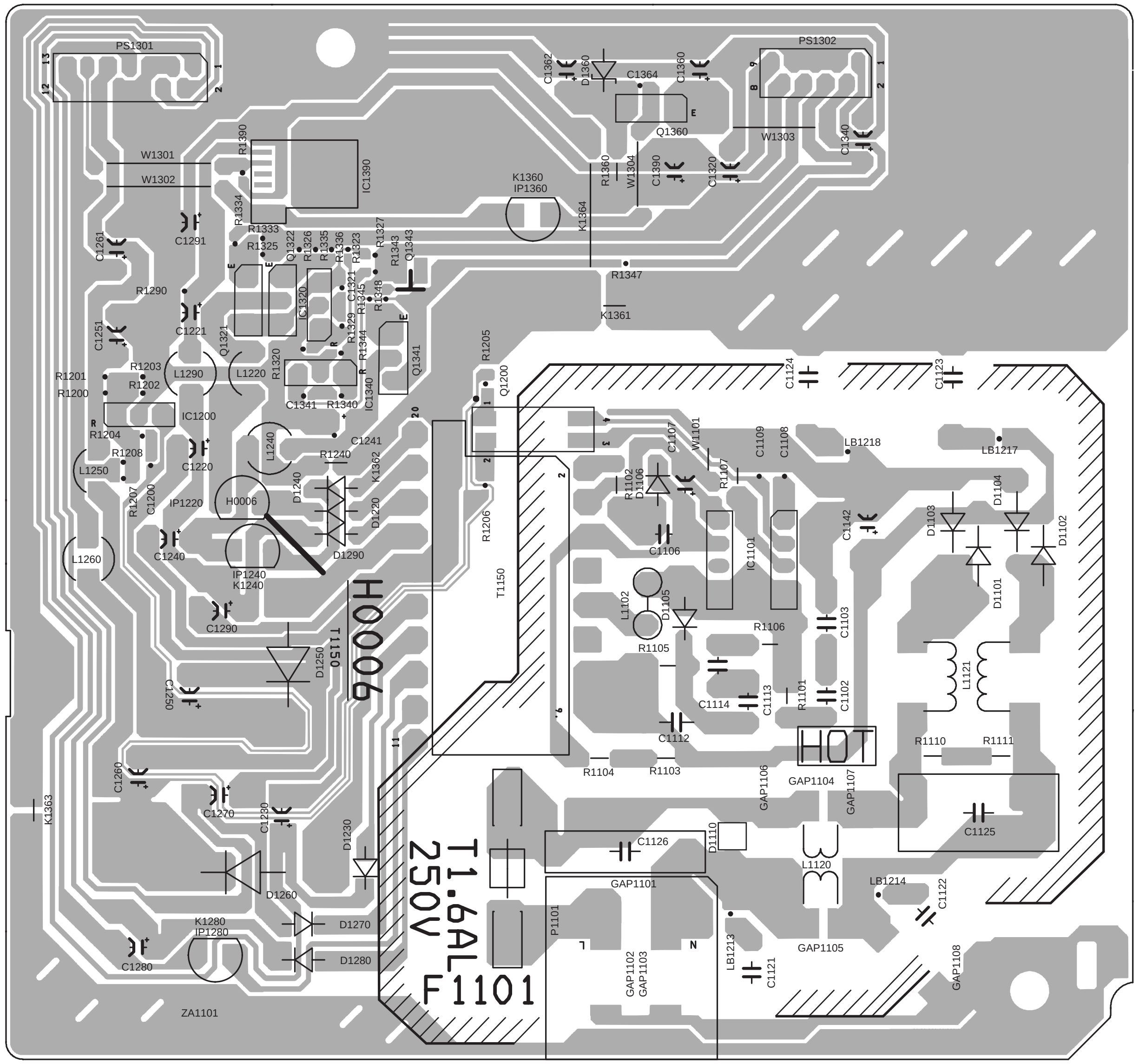
COMPONENT SIDE


PS1302
C1360
Q1360
D1360
C1362
C1340
W1303
C1320
C1390
R1360
W1304
K1364
K1360
IP1360
K1361
PS1301
W1301
W1302
Q1322
Q1321
C1291
C1221
C1261
IC1320
L1220
L1290
C1251
Q1341
IC1340
C1241
L1240
IC1200
K1362
C1220
L1250
C1123
C1124
C1142
R1107
C1107
W1101
D1106
R1102
D1104
D1102
D1101
D1103
IC1101
C1106
D1240
D1220
D1290
IP1220
H0006
C1240
L1260
K1240
IP1240
L1121
C1103
R1106
C1114
D1105
L1102
C1290
T1150
D1250
C1102
R1101
C1113
R1105
C1112
C1250
HOT
R1111
R1110
R1103
R1104
C1230
C1270
C1260
C1125
D1110
C1126
ZA1104
D1230
K1363
D1260
C1122
ZA1103
T1.6AL
250V
F1101
D1270
IP1280
K1280
C1280
D1280
L1120
C1121
P1101
ZA1101

POWER PCB							
IC1101	C3	IP1220	C5	Q1200	--	PS1301	D6
IC1200	C6	IP1240	C5	Q1321	C5	PS1302	D2
IC1320	C5	IP1280	B5	Q1322	C5	F1101	B4
IC1340	C5	IP1360	D4	Q1341	C4		
IC1390	--	P1101	B3	Q1343	--		
				Q1360	D3		

ADRESS INFORMATION

SOLDER SIDE

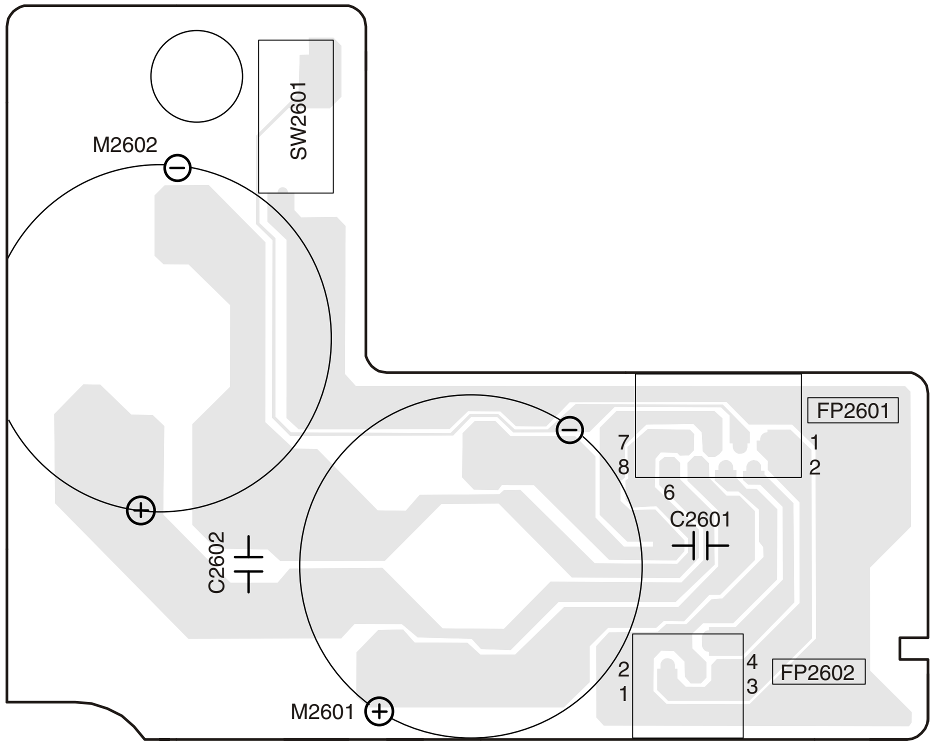

PS1301
W1301
W1302
R1390
IC1390
C1291
R1334
R1333
R1325
Q1322
R1326
R1335
R1336
R1323
R1327
R1343
Q1343
R1347
K1361
K1360
IP1360
K1364
R1360
W1304
C1390
C1320
C1362
D1360
C1364
C1360
Q1360
PS1302
W1303
C1340
C1261
R1290
C1221
Q1321
IC1320
C1251
R1201
R1200
R1203
R1202
L1290
L1220
R1320
C1341
R1340
IC1340
Q1341
R1205
Q1200
IC1200
R1204
R1208
C1220
L1250
R1207
C1200
IP1220
H0006
L1240
D1240
R1240
C1241
K1362
D1220
D1290
R1206
C1124
C1123
C1107
W1101
R1102
D1106
R1107
C1109
C1108
LB1218
LB1217
L1260
C1240
IP1240
K1240
C1106
IC1101
C1142
D1103
D1104
D1102
D1101
C1290
D1250
T1150
L1102
D1105
R1105
R1106
C1103
L1121
C1250
C1114
C1113
R1101
C1102
C1112
HOT
R1110
R1111
R1104
R1103
GAP1106
GAP1104
GAP1107
C1260
C1270
C1230
D1230
C1126
D1110
C1125
K1363
D1260
GAP1101
L1120
LB1214
C1122
T1.6AL
250V
F1101
K1280
IP1280
D1270
D1280
C1280
P1101
GAP1102
GAP1103
LB1213
C1121
GAP1105
GAP1108
ZA1101

POWER PCB							
IC1101	C10	IP1220	C8	Q1200	C9	PS1301	D7
IC1200	C8	IP1240	C8	Q1321	C8	PS1302	D11
IC1320	C8	IP1280	B8	Q1322	C8	F1101	B9
IC1340	C9	IP1360	D9	Q1341	C9		
IC1390	D9	P1101	B10	Q1343	D9		
				Q1360	D10		

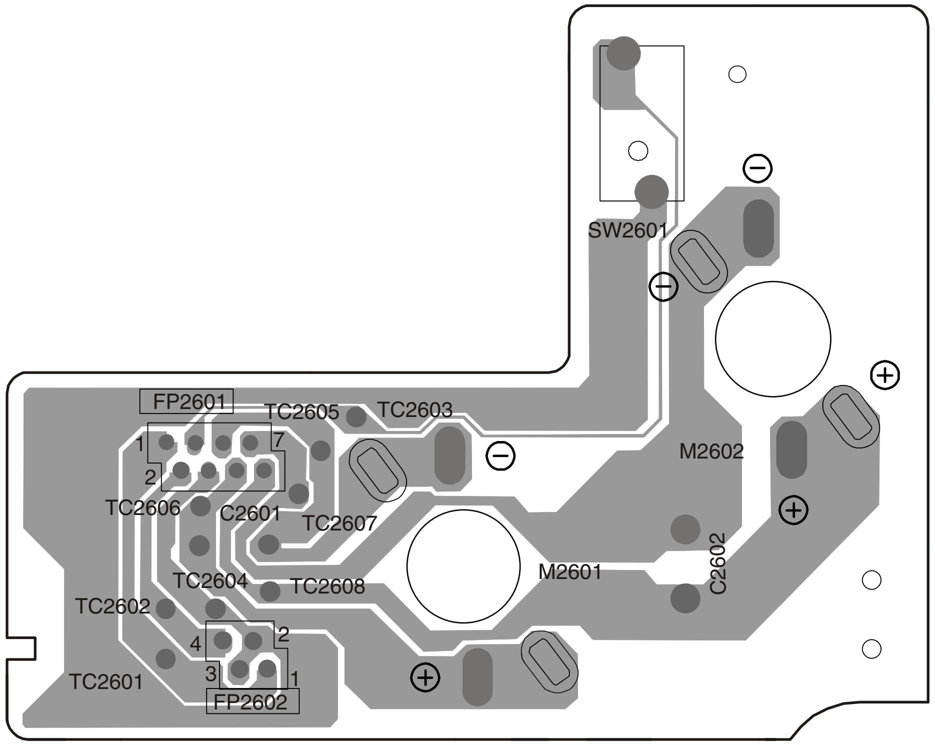
ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
COMPONENT SIDE / SOLDER SIDE

COMPONENT SIDE


M2602
SW2601
FP2601
7
8
1
2
6
C2601
C2602
2
1
4
3
FP2602
M2601

SOLDER SIDE


SW2601
FP2601
TC2605
TC2603
1
7
2
TC2606
C2601
TC2607
M2602
C2602
M2601
TC2604
TC2608
TC2602
4
2
3
1
TC2601
FP2602

TERMINAL PCB	
FP2601	C5
FP2602	B5
M2601	B3
M2602	D2
SW2601	D3

ADDRESS INFORMATION

TERMINAL PCB	
FP2601	C8
FP2602	B8
M2601	C9
M2602	C10
SW2601	D10

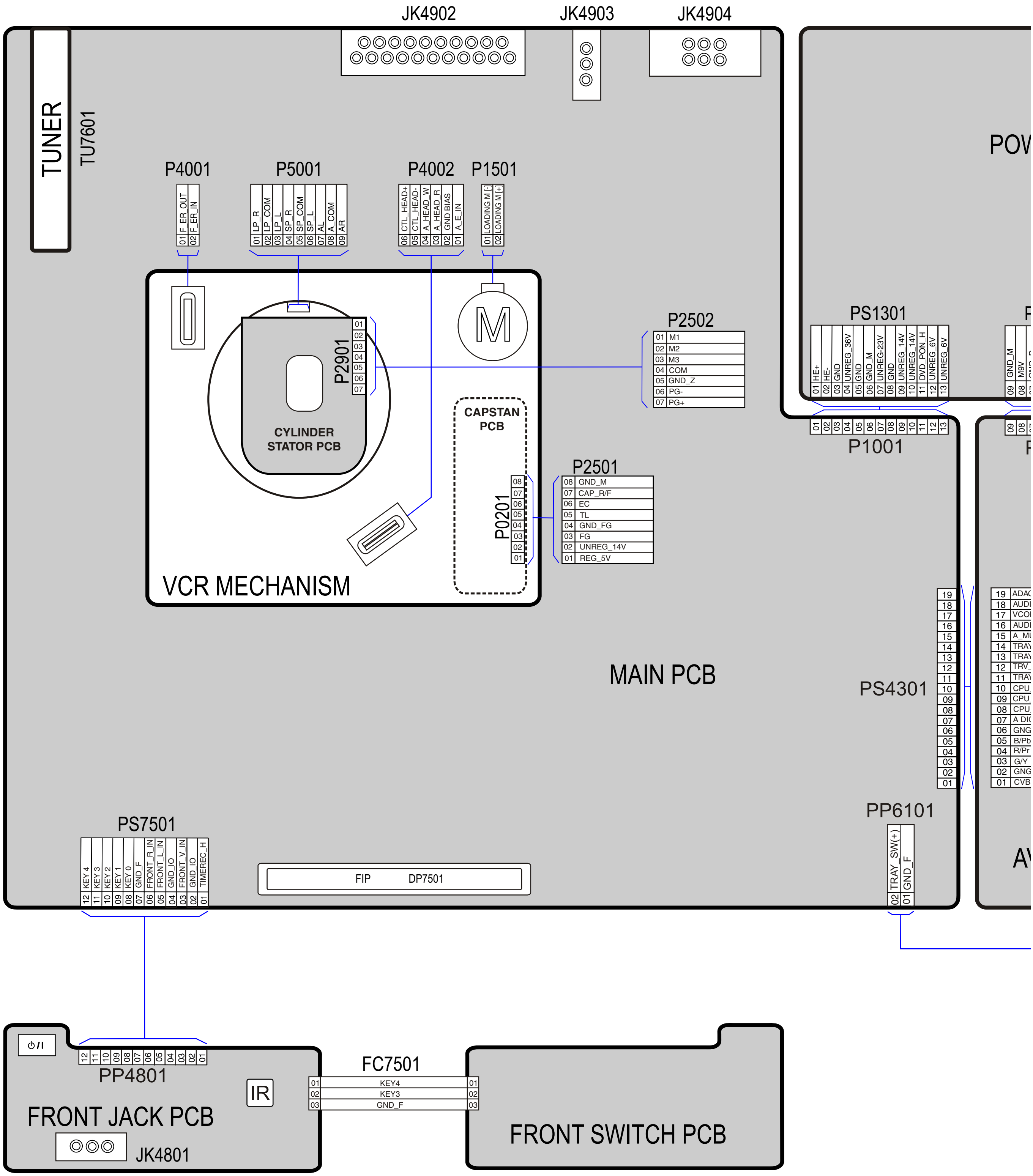
ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
TERMINAL PCB
COMPONENT SIDE / SOLDER SIDE

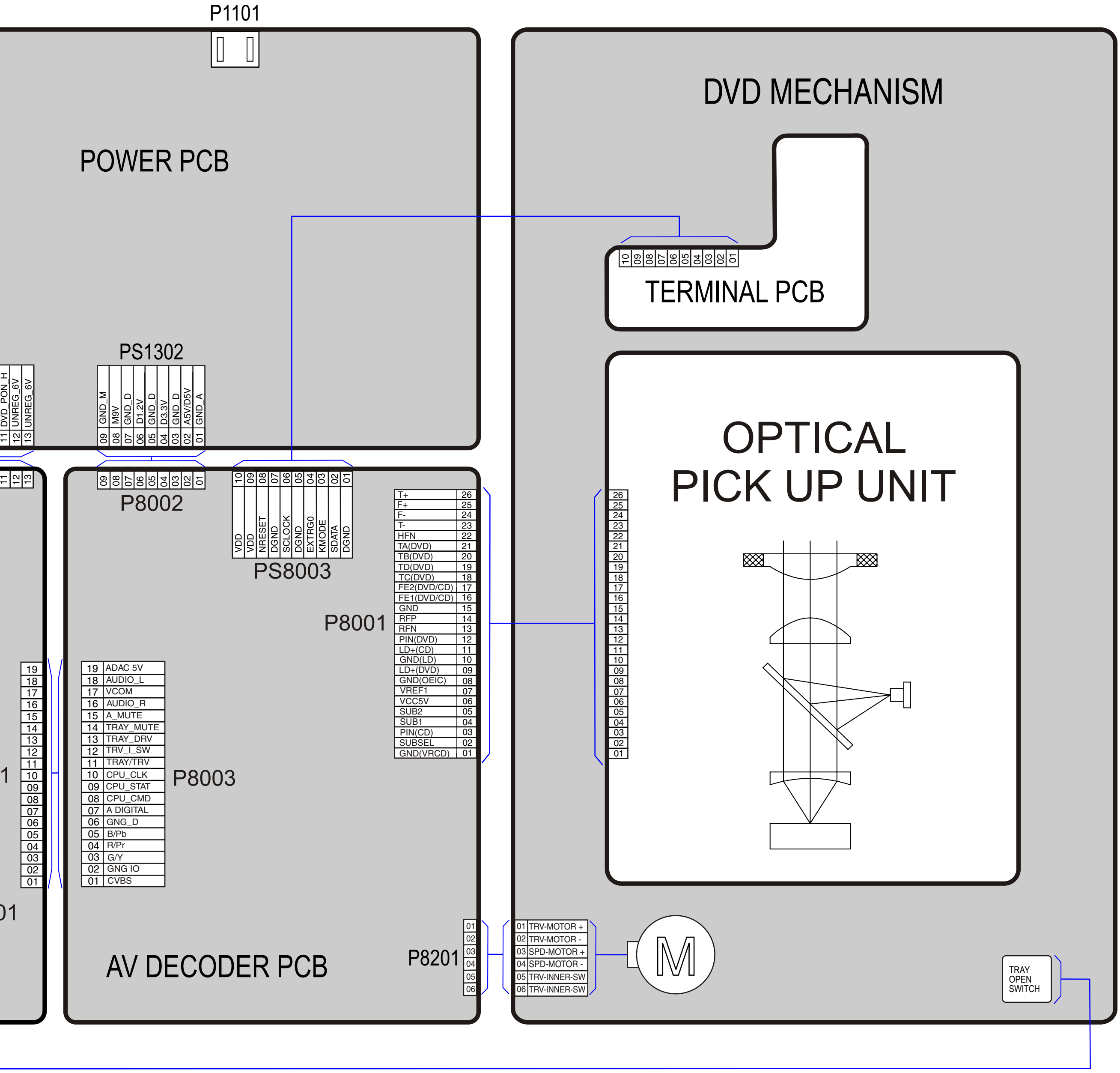
D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12

16 INTERCONNECTION DIAGRAM


JK4902
JK4903
JK4904
TUNER
TU7601
P4001
01 F_ER_OUT
02 F_ER_IN
P5001
01 LP_R
02 LP_COM
03 LP_L
04 SP_R
05 SP_COM
06 SP_L
07 AL
08 A_COM
09 AR
P4002
06 CTL_HEAD+
05 CTL_HEAD-
04 A_HEAD_W
03 A_HEAD_R
02 GND BIAS
01 A_E_IN
P1501
01 LOADING M [-]
02 LOADING M [+]
POW
P2901
01
02
03
04
05
06
07
M
CYLINDER STATOR PCB
P2502
01 M1
02 M2
03 M3
04 COM
05 GND_Z
06 PG-
07 PG+
PS1301
01 HE+
02 HE-
03 GND
04 UNREG_36V
05 GND
06 GND_M
07 UNREG-23V
08 GND
09 UNREG_14V
10 UNREG_14V
11 DVD_PON_H
12 UNREG_6V
13 UNREG_6V
09 GND_M
08 M9V
P1001
01 02 03 04 05 06 07 08 09 10 11 12 13
09 08
CAPSTAN PCB
P0201
08 07 06 05 04 03 02 01
P2501
08 GND_M
07 CAP_R/F
06 EC
05 TL
04 GND_FG
03 FG
02 UNREG_14V
01 REG_5V
VCR MECHANISM
MAIN PCB
PS4301
19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
19 ADAC
18 AUDI
17 VCOI
16 AUDI
15 A_MU
14 TRAY
13 TRAY
12 TRV_
11 TRAY
10 CPU_
09 CPU_
08 CPU_
07 A DIC
06 GNG
05 B/Pb
04 R/Pr
03 G/Y
02 GNG
01 CVB
PP6101
02 TRAY_SW(+)
01 GND_F
AV
PS7501
12 KEY 4
11 KEY 3
10 KEY 2
09 KEY 1
08 KEY 0
07 GND_F
06 FRONT_R_IN
05 FRONT_L_IN
04 GND_IO
03 FRONT_V_IN
02 GND_IO
01 TIMEREC_H
FIP DP7501
⏻/I
12 11 10 09 08 07 06 05 04 03 02 01
PP4801
IR
FRONT JACK PCB
JK4801
FC7501
01 KEY4 01
02 KEY3 02
03 GND_F 03
FRONT SWITCH PCB

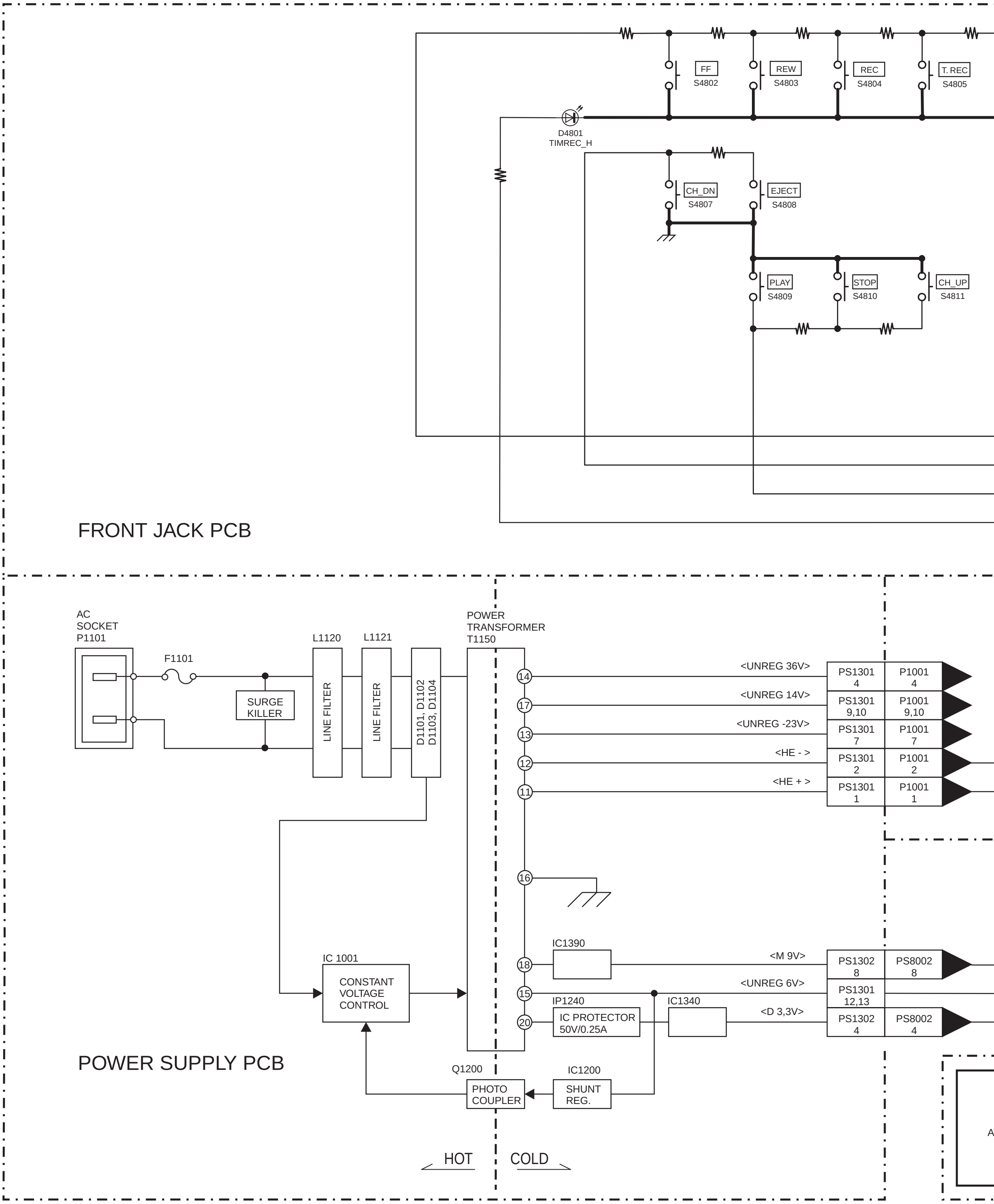
NAVIGATION
POWER PCB
MAIN PCB - AUDIO / VIDEO
MAIN PCB - I/O
MAIN PCB - SYSCON & SERVO
AV DECODER PCB
FRONT PANEL PCB
TERMINAL PCB

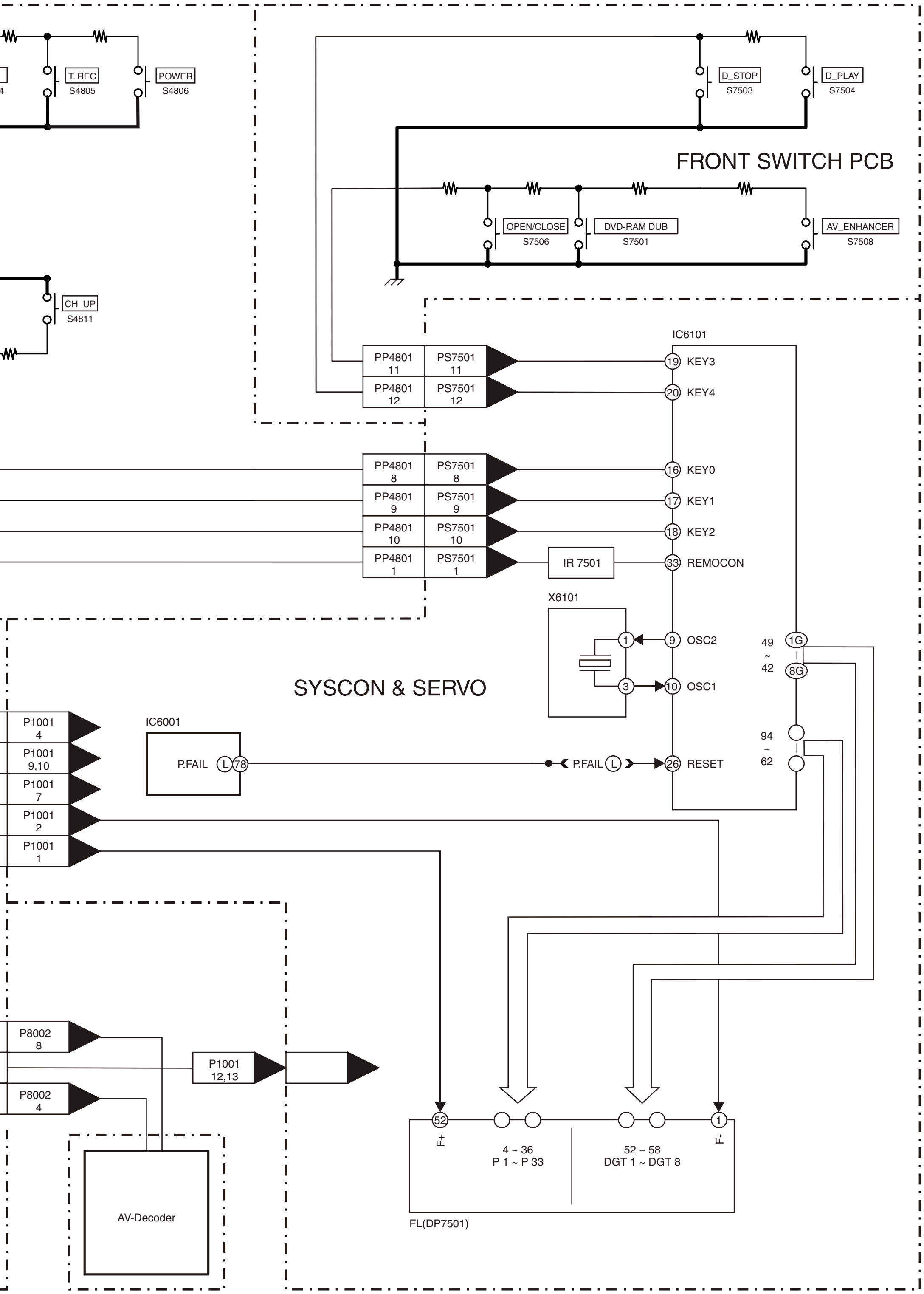

P1101
POWER PCB
11 DVD_PON_H
12 UNREG_6V
13 UNREG_6V
PS1302
09 GND_M
08 M9V
07 GND_D
06 D1.2V
05 GND_D
04 D3.3V
03 GND_D
02 A5V/D5V
01 GND_A
11
12
13
09 08 07 06 05 04 03 02 01
P8002
10 VDD
09 VDD
08 NRESET
07 DGND
06 SCLOCK
05 DGND
04 EXTRG0
03 KMODE
02 SDATA
01 DGND
PS8003
P8001
T+ 26
F+ 25
F- 24
T- 23
HFN 22
TA(DVD) 21
TB(DVD) 20
TD(DVD) 19
TC(DVD) 18
FE2(DVD/CD) 17
FE1(DVD/CD) 16
GND 15
RFP 14
RFN 13
PIN(DVD) 12
LD+(CD) 11
GND(LD) 10
LD+(DVD) 09
GND(OEIC) 08
VREF1 07
VCC5V 06
SUB2 05
SUB1 04
PIN(CD) 03
SUBSEL 02
GND(VRCD) 01
19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
1
01
19 ADAC 5V
18 AUDIO_L
17 VCOM
16 AUDIO_R
15 A_MUTE
14 TRAY_MUTE
13 TRAY_DRV
12 TRV_I_SW
11 TRAY/TRV
10 CPU_CLK
09 CPU_STAT
08 CPU_CMD
07 A DIGITAL
06 GNG_D
05 B/Pb
04 R/Pr
03 G/Y
02 GNG IO
01 CVBS
P8003
AV DECODER PCB
P8201
01 02 03 04 05 06
DVD MECHANISM
10 09 08 07 06 05 04 03 02 01
TERMINAL PCB
OPTICAL PICK UP UNIT
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
01 TRV-MOTOR +
02 TRV-MOTOR -
03 SPD-MOTOR +
04 SPD-MOTOR -
05 TRV-INNER-SW
06 TRV-INNER-SW
M
TRAY OPEN SWITCH

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
INTERCONNECTION DIAGRAM

17 BLOCK DIAGRAM

17.1. POWER SUPPLY BLOCK DIAGRAM

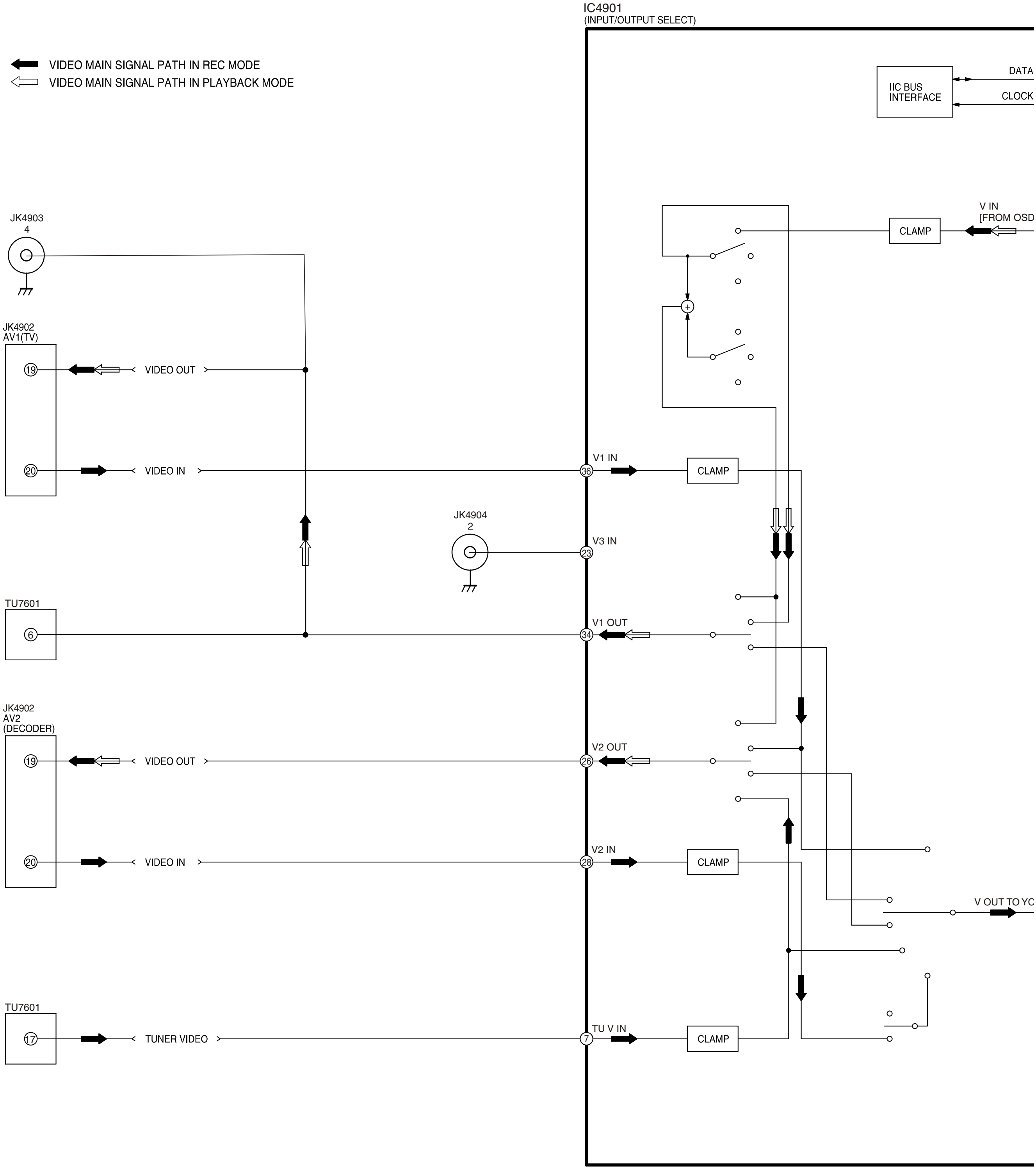

FF
S4802
REW
S4803
REC
S4804
T. REC
S4805
D4801
TIMREC_H
CH_DN
S4807
EJECT
S4808
PLAY
S4809
STOP
S4810
CH_UP
S4811
FRONT JACK PCB
AC
SOCKET
P1101
F1101
SURGE
KILLER
L1120
L1121
LINE FILTER
LINE FILTER
D1101, D1102
D1103, D1104
POWER
TRANSFORMER
T1150
14
17
13
12
11
16
18
15
20
<UNREG 36V>
<UNREG 14V>
<UNREG -23V>
<HE - >
<HE + >
PS1301
4
P1001
4
PS1301
9,10
P1001
9,10
PS1301
7
P1001
7
PS1301
2
P1001
2
PS1301
1
P1001
1
IC1390
<M 9V>
PS1302
8
PS8002
8
<UNREG 6V>
PS1301
12,13
IP1240
IC PROTECTOR
50V/0.25A
IC1340
<D 3,3V>
PS1302
4
PS8002
4
IC 1001
CONSTANT
VOLTAGE
CONTROL
POWER SUPPLY PCB
Q1200
PHOTO
COUPLER
IC1200
SHUNT
REG.
HOT
COLD
A

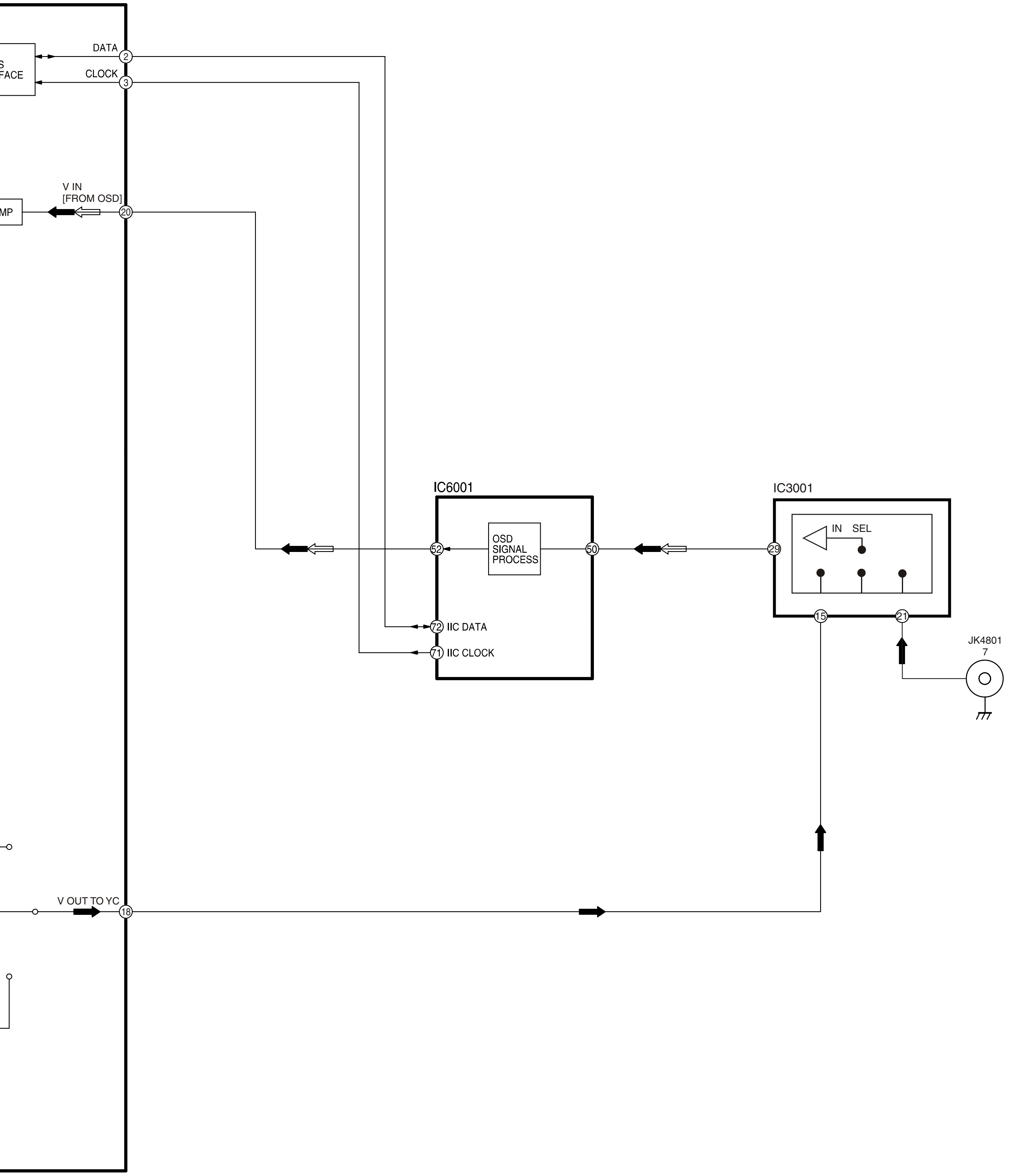


T. REC
S4805
POWER
S4806
D_STOP
S7503
D_PLAY
S7504
FRONT SWITCH PCB
OPEN/CLOSE
S7506
DVD-RAM DUB
S7501
AV_ENHANCER
S7508
CH_UP
S4811
IC6101
PP4801 11
PS7501 11
19 KEY3
PP4801 12
PS7501 12
20 KEY4
PP4801 8
PS7501 8
16 KEY0
PP4801 9
PS7501 9
17 KEY1
PP4801 10
PS7501 10
18 KEY2
PP4801 1
PS7501 1
IR 7501
33 REMOCON
X6101
1
9 OSC2
3
10 OSC1
49 ~ 42
1G
8G
94 ~ 62
SYSCON & SERVO
P1001 4
P1001 9,10
P1001 7
P1001 2
P1001 1
IC6001
P.FAIL L 78
P.FAIL L
26 RESET
P8002 8
P1001 12,13
P8002 4
AV-Decoder
52
F+
4 ~ 36
P 1 ~ P 33
52 ~ 58
DGT 1 ~ DGT 8
1
F-
FL(DP7501)

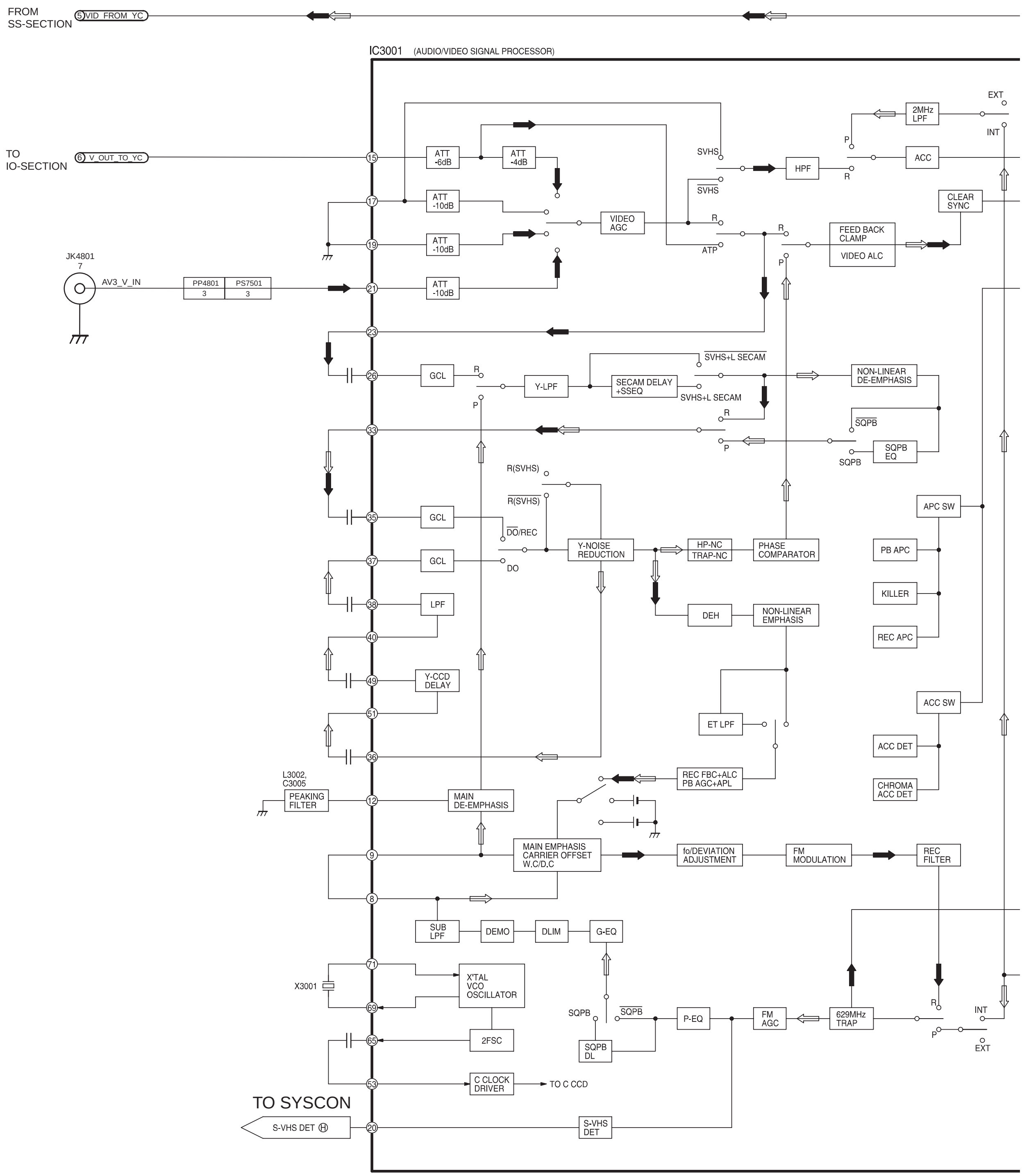
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
BLOCK DIAGRAM

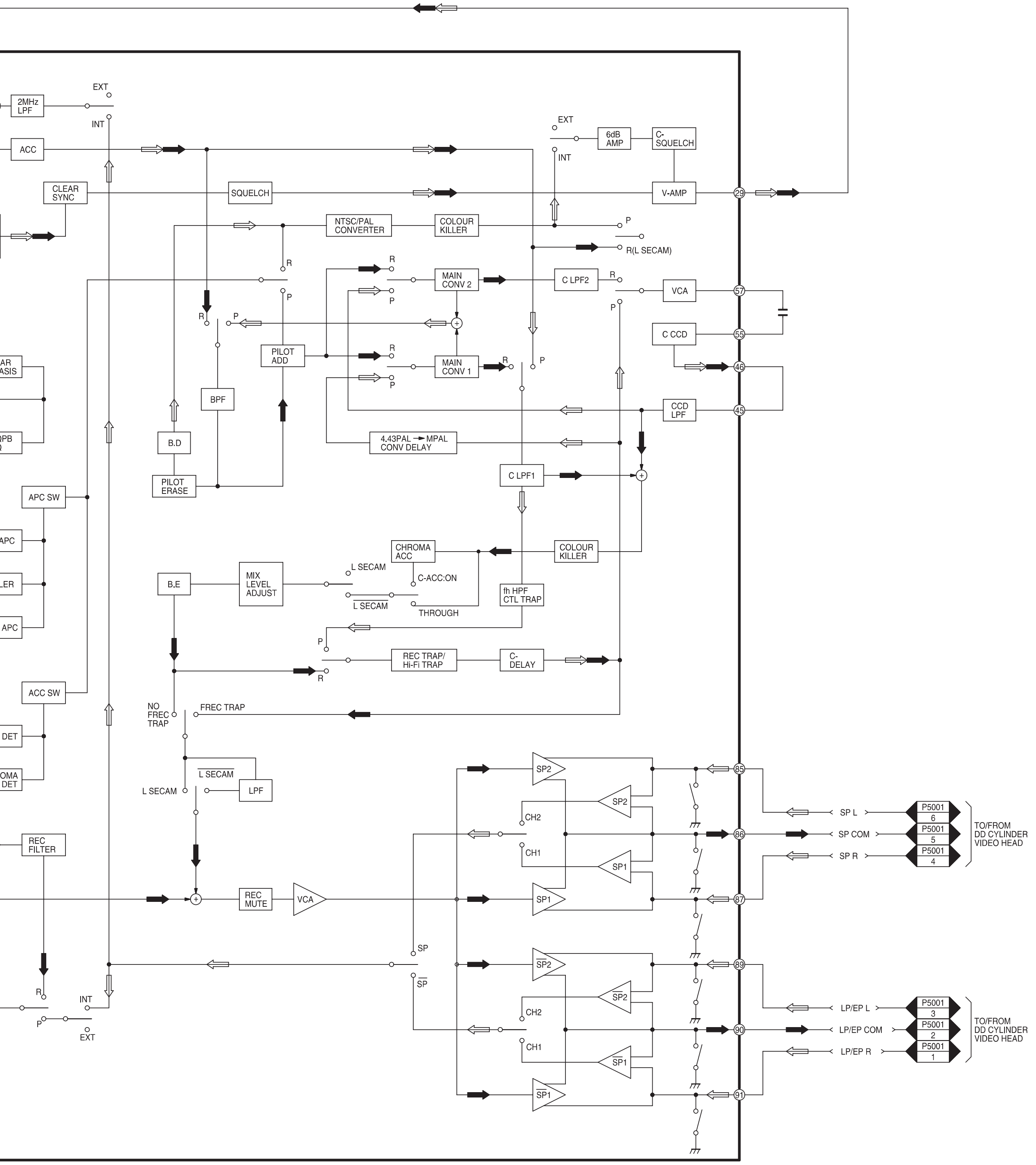
17.2. VCR LUMINANCE & CHROMINANCE BLOCK DIAGRAM


VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
IC4901
(INPUT/OUTPUT SELECT)
IIC BUS INTERFACE
DATA
CLOCK
V IN
[FROM OSD
CLAMP
JK4903
4
JK4902
AV1(TV)
19
VIDEO OUT
20
VIDEO IN
V1 IN
36
CLAMP
JK4904
2
V3 IN
23
TU7601
6
V1 OUT
34
JK4902
AV2
(DECODER)
19
VIDEO OUT
V2 OUT
26
20
VIDEO IN
V2 IN
28
CLAMP
V OUT TO YC
TU7601
17
TUNER VIDEO
TU V IN
7
CLAMP


S
FACE
DATA
2
CLOCK
3
V IN
[FROM OSD]
20
MP
IC6001
OSD
SIGNAL
PROCESS
52
50
72
IIC DATA
71
IIC CLOCK
IC3001
IN
SEL
29
15
21
JK4801
7
V OUT TO YC
18

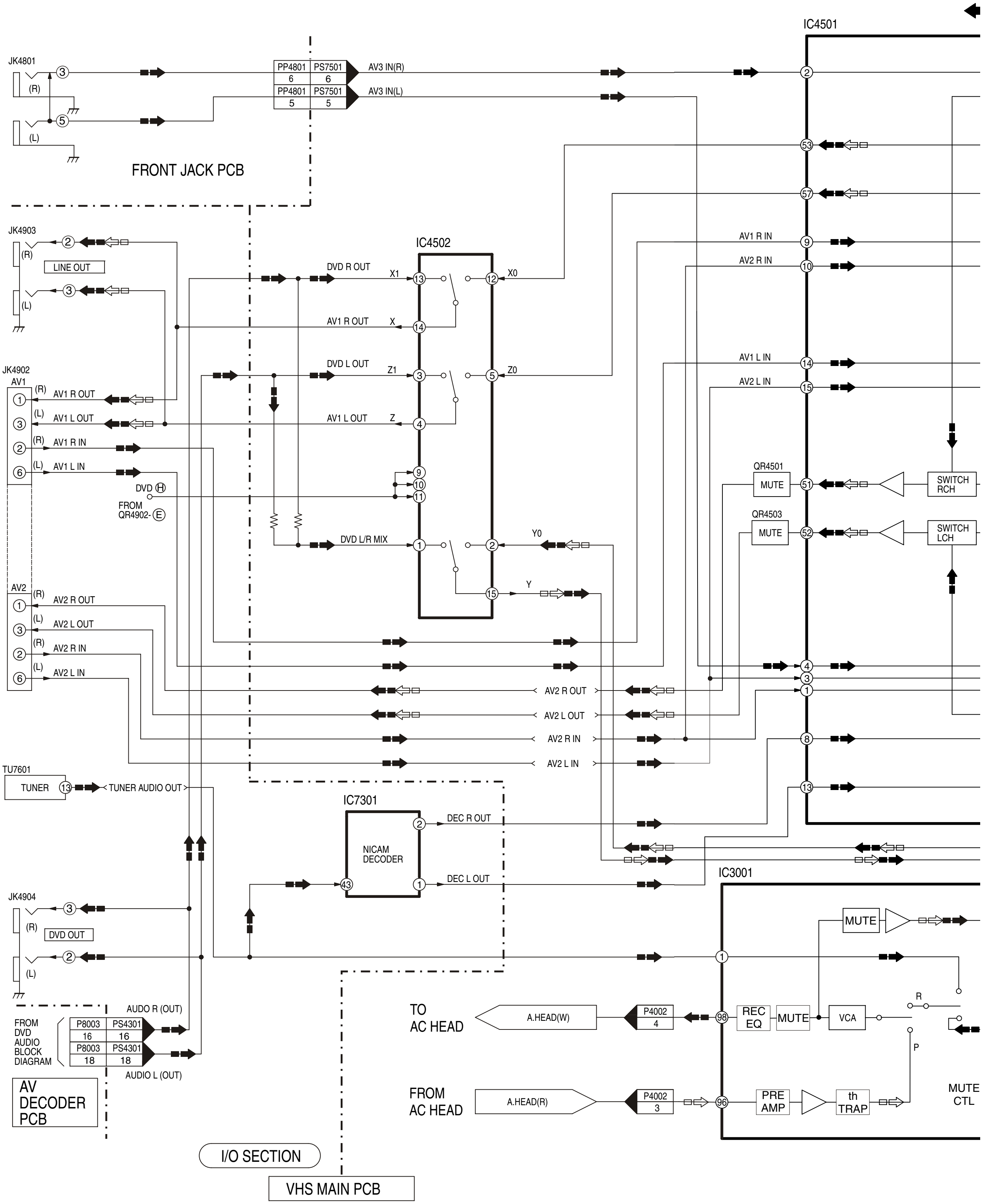
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
VCR LUMINANCE & CHROMINANCE 1/2
BLOCK DIAGRAM

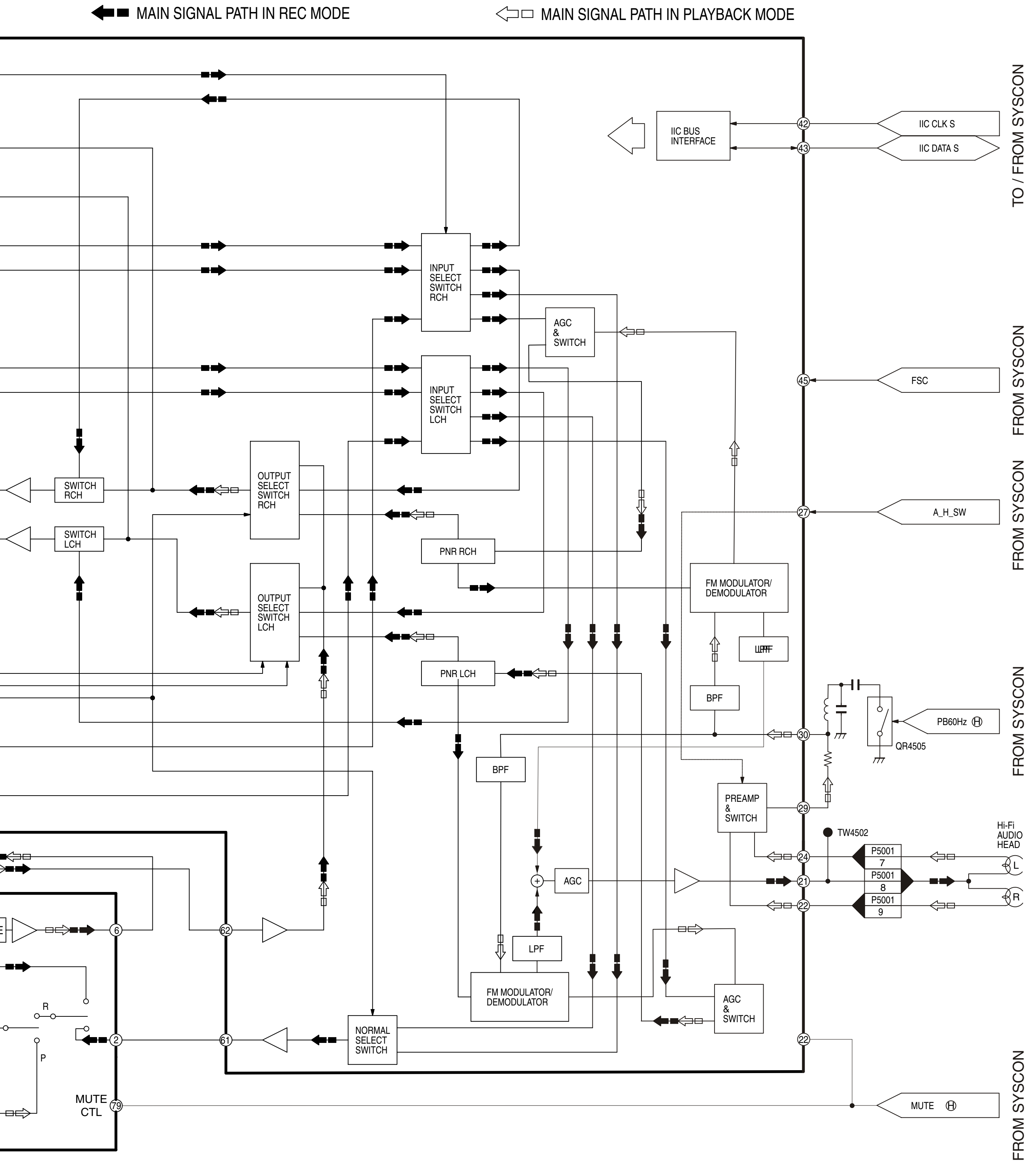

FROM
SS-SECTION
5 VID_FROM_YC
IC3001 (AUDIO/VIDEO SIGNAL PROCESSOR)
TO
IO-SECTION
6 V_OUT_TO_YC
JK4801
7
AV3_V_IN
PP4801
3
PS7501
3
15
17
19
21
23
26
33
35
37
38
40
49
51
36
12
9
8
71
69
65
53
20
ATT -6dB
ATT -4dB
ATT -10dB
ATT -10dB
ATT -10dB
VIDEO AGC
SVHS
SVHS
R
ATP
R
P
HPF
R
P
ACC
2MHz LPF
EXT
INT
CLEAR SYNC
FEED BACK CLAMP
VIDEO ALC
GCL
R
P
Y-LPF
SECAM DELAY +SSEQ
SVHS+L SECAM
SVHS+L SECAM
R
P
NON-LINEAR DE-EMPHASIS
SQPB
SQPB
SQPB EQ
R(SVHS)
R(SVHS)
DO/REC
DO
GCL
GCL
Y-NOISE REDUCTION
HP-NC TRAP-NC
PHASE COMPARATOR
APC SW
PB APC
KILLER
REC APC
LPF
DEH
NON-LINEAR EMPHASIS
Y-CCD DELAY
ET LPF
ACC SW
ACC DET
CHROMA ACC DET
REC FBC+ALC PB AGC+APL
L3002, C3005
PEAKING FILTER
MAIN DE-EMPHASIS
MAIN EMPHASIS CARRIER OFFSET W.C/D.C
fo/DEVIATION ADJUSTMENT
FM MODULATION
REC FILTER
SUB LPF
DEMO
DLIM
G-EQ
X3001
X'TAL VCO OSCILLATOR
2FSC
SQPB
SQPB
SQPB DL
P-EQ
FM AGC
629MHz TRAP
R
P
INT
EXT
C CLOCK DRIVER
TO C CCD
TO SYSCON
S-VHS DET Ⓗ
S-VHS DET


EXT
2MHz LPF
INT
ACC
CLEAR SYNC
SQUELCH
NTSC/PAL CONVERTER
COLOUR KILLER
EXT
6dB AMP
C-SQUELCH
INT
V-AMP
29
P
R(L SECAM)
R
P
MAIN CONV 2
C LPF2
R
P
VCA
57
R
P
C CCD
55
PILOT ADD
R
P
MAIN CONV 1
R
P
46
BPF
CCD LPF
45
B.D
4,43PAL ➜ MPAL CONV DELAY
PILOT ERASE
C LPF1
APC SW
CHROMA ACC
COLOUR KILLER
B.E
MIX LEVEL ADJUST
L SECAM
C-ACC:ON
L SECAM
THROUGH
fh HPF CTL TRAP
P
REC TRAP/ Hi-Fi TRAP
C-DELAY
R
ACC SW
NO FREC TRAP
FREC TRAP
L SECAM
L SECAM
LPF
SP2
SP2
CH2
CH1
SP1
SP1
85
86
87
SP L
SP COM
SP R
P5001 6
P5001 5
P5001 4
TO/FROM DD CYLINDER VIDEO HEAD
REC FILTER
REC MUTE
VCA
SP
SP
SP2
SP2
CH2
CH1
SP1
SP1
89
90
91
LP/EP L
LP/EP COM
LP/EP R
P5001 3
P5001 2
P5001 1
TO/FROM DD CYLINDER VIDEO HEAD
R
P
INT
EXT
AR ASIS
QPB R
APC
LER
APC
DET
OMA DET

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
VCR LUMINANCE & CHROMINANCE 2/2
BLOCK DIAGRAM

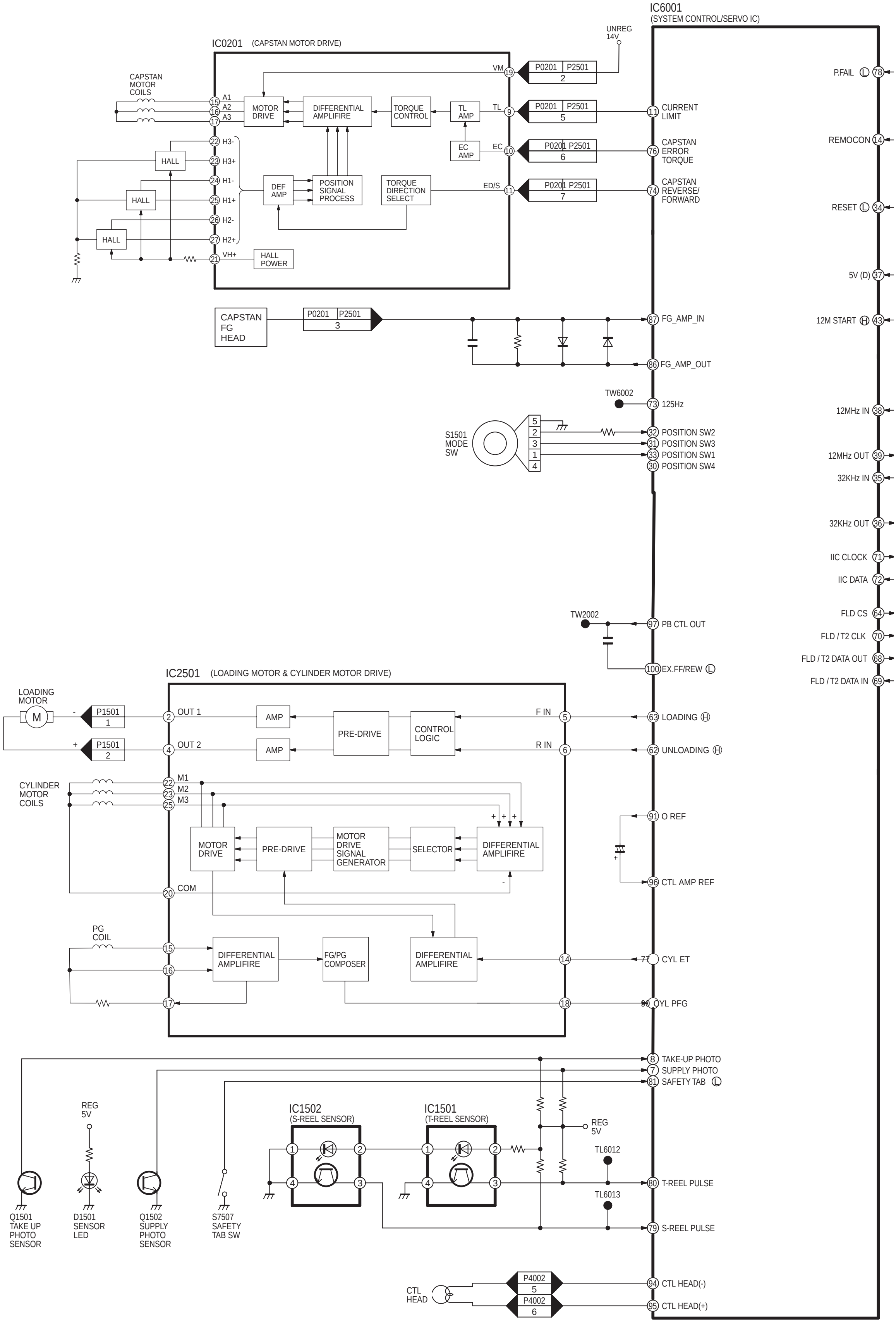
17.3. VCR AUDIO BLOCK DIAGRAM

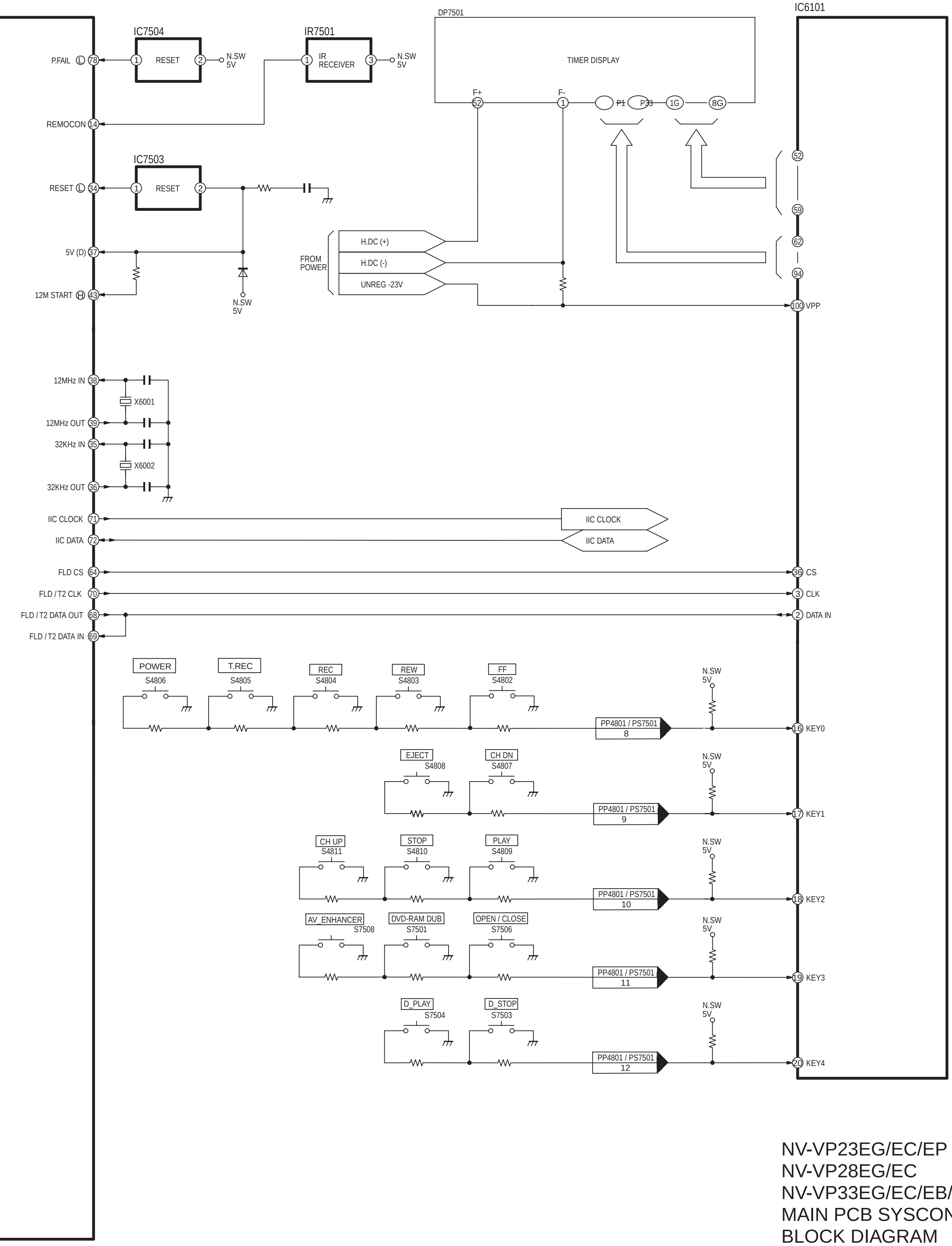

IC4501
JK4801
(R)
(L)
PP4801
PS7501
6
6
PP4801
PS7501
5
5
AV3 IN(R)
AV3 IN(L)
FRONT JACK PCB
JK4903
(R)
LINE OUT
(L)
IC4502
DVD R OUT
X1
X0
AV1 R OUT
X
DVD L OUT
Z1
Z0
AV1 L OUT
Z
AV1 R IN
AV2 R IN
AV1 L IN
AV2 L IN
JK4902
AV1
(R) AV1 R OUT
(L) AV1 L OUT
(R) AV1 R IN
(L) AV1 L IN
DVD Ⓗ
FROM QR4902-Ⓔ
DVD L/R MIX
Y0
Y
QR4501
MUTE
SWITCH RCH
QR4503
MUTE
SWITCH LCH
AV2
(R) AV2 R OUT
(L) AV2 L OUT
(R) AV2 R IN
(L) AV2 L IN
AV2 R OUT
AV2 L OUT
AV2 R IN
AV2 L IN
TU7601
TUNER
TUNER AUDIO OUT
IC7301
NICAM DECODER
DEC R OUT
DEC L OUT
IC3001
JK4904
(R)
DVD OUT
(L)
MUTE
R
TO AC HEAD
A.HEAD(W)
P4002
4
REC EQ
MUTE
VCA
P
FROM AC HEAD
A.HEAD(R)
P4002
3
PRE AMP
th TRAP
MUTE CTL
AUDO R (OUT)
FROM DVD AUDIO BLOCK DIAGRAM
P8003
PS4301
16
16
P8003
PS4301
18
18
AUDIO L (OUT)
AV DECODER PCB
I/O SECTION
VHS MAIN PCB


MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
IIC BUS INTERFACE
42
43
IIC CLK S
IIC DATA S
TO / FROM SYSCON
INPUT SELECT SWITCH RCH
AGC & SWITCH
INPUT SELECT SWITCH LCH
45
FSC
FROM SYSCON
SWITCH RCH
OUTPUT SELECT SWITCH RCH
27
A_H_SW
FROM SYSCON
SWITCH LCH
PNR RCH
FM MODULATOR/ DEMODULATOR
OUTPUT SELECT SWITCH LCH
LPF
PNR LCH
BPF
30
PB60Hz Ⓗ
QR4505
FROM SYSCON
BPF
PREAMP & SWITCH
29
TW4502
Hi-Fi AUDIO HEAD
P5001 7
24
L
AGC
21
P5001 8
22
P5001 9
R
6
62
LPF
FM MODULATOR/ DEMODULATOR
AGC & SWITCH
R
2
61
NORMAL SELECT SWITCH
22
P
MUTE CTL
79
MUTE Ⓗ
FROM SYSCON

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB AUDIO
BLOCK DIAGRAM

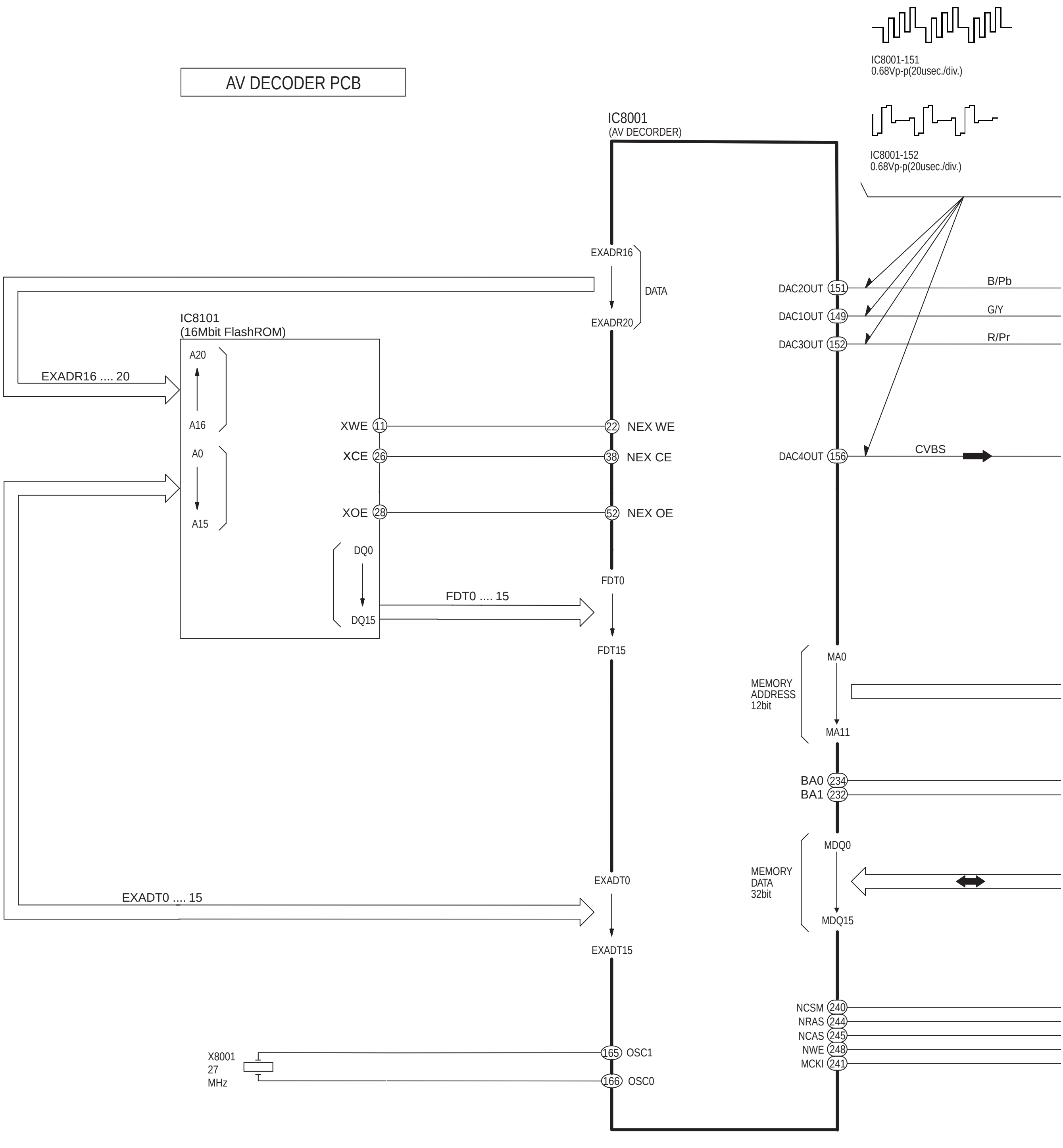
17.4. SYSCON & SERVO BLOCK DIAGRAM

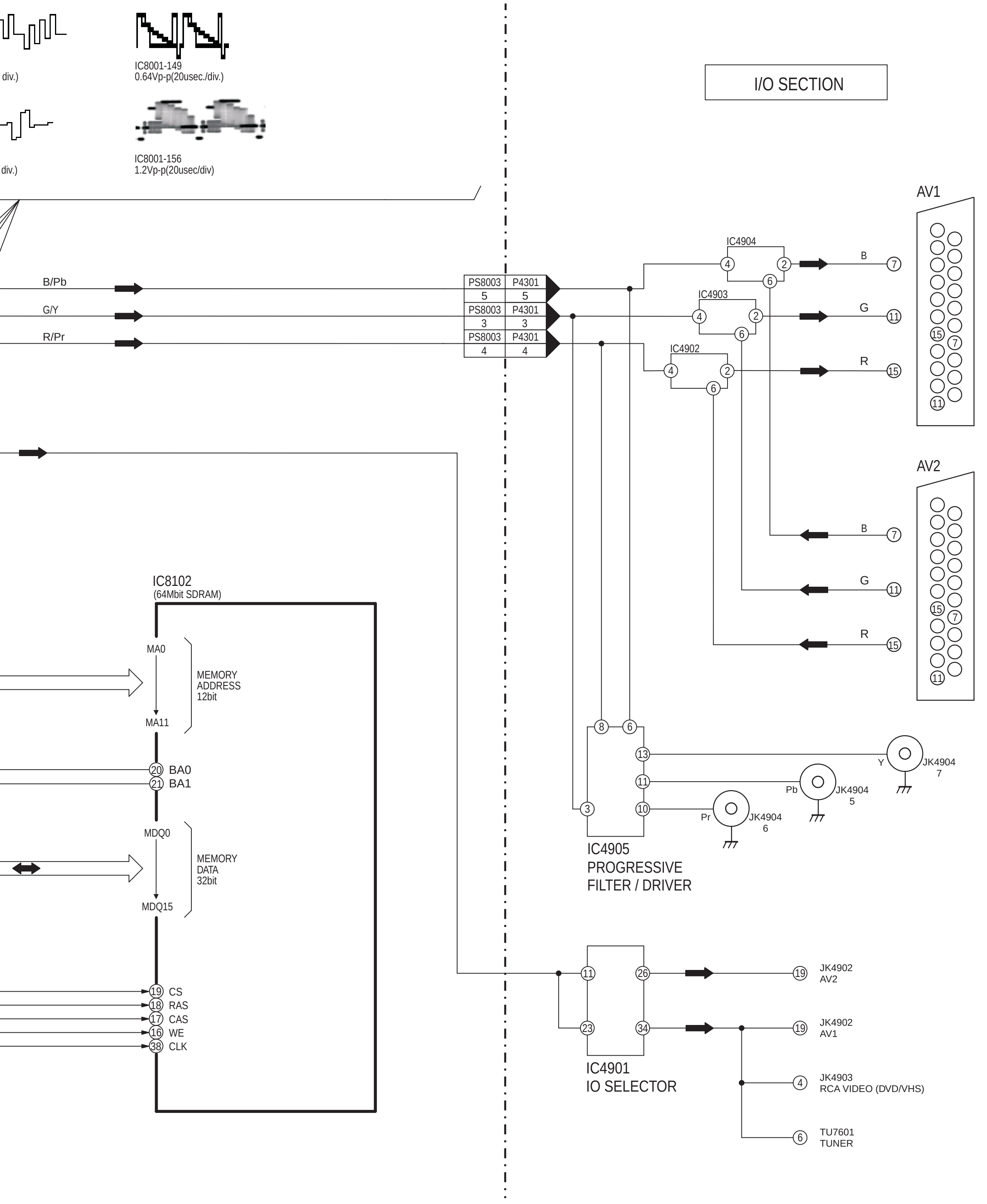

IC6001
(SYSTEM CONTROL/SERVO IC)
UNREG
14V
IC0201 (CAPSTAN MOTOR DRIVE)
CAPSTAN
MOTOR
COILS
A1
A2
A3
MOTOR
DRIVE
DIFFERENTIAL
AMPLIFIRE
TORQUE
CONTROL
TL
AMP
EC
AMP
VM
TL
EC
ED/S
H3-
H3+
H1-
H1+
H2-
H2+
VH+
HALL
DEF
AMP
POSITION
SIGNAL
PROCESS
TORQUE
DIRECTION
SELECT
HALL
POWER
P0201
P2501
CURRENT
LIMIT
CAPSTAN
ERROR
TORQUE
CAPSTAN
REVERSE/
FORWARD
P.FAIL Ⓛ 78
REMOCON 14
RESET Ⓛ 34
5V (D) 37
12M START Ⓗ 43
CAPSTAN
FG
HEAD
FG_AMP_IN
FG_AMP_OUT
TW6002
125Hz
12MHz IN 38
S1501
MODE
SW
POSITION SW2
POSITION SW3
POSITION SW1
POSITION SW4
12MHz OUT 39
32KHz IN 35
32KHz OUT 36
IIC CLOCK 71
IIC DATA 72
FLD CS 64
FLD / T2 CLK 70
FLD / T2 DATA OUT 68
FLD / T2 DATA IN 69
TW2002
PB CTL OUT
EX.FF/REW Ⓛ
IC2501 (LOADING MOTOR & CYLINDER MOTOR DRIVE)
LOADING
MOTOR
M
P1501
OUT 1
OUT 2
AMP
PRE-DRIVE
CONTROL
LOGIC
F IN
R IN
LOADING Ⓗ
UNLOADING Ⓗ
CYLINDER
MOTOR
COILS
M1
M2
M3
COM
MOTOR
DRIVE
PRE-DRIVE
MOTOR
DRIVE
SIGNAL
GENERATOR
SELECTOR
DIFFERENTIAL
AMPLIFIRE
O REF
CTL AMP REF
PG
COIL
DIFFERENTIAL
AMPLIFIRE
FG/PG
COMPOSER
DIFFERENTIAL
AMPLIFIRE
CYL ET
CYL PFG
TAKE-UP PHOTO
SUPPLY PHOTO
SAFETY TAB Ⓛ
REG
5V
IC1502
(S-REEL SENSOR)
IC1501
(T-REEL SENSOR)
REG
5V
TL6012
T-REEL PULSE
TL6013
S-REEL PULSE
Q1501
TAKE UP
PHOTO
SENSOR
D1501
SENSOR
LED
Q1502
SUPPLY
PHOTO
SENSOR
S7507
SAFETY
TAB SW
CTL
HEAD
P4002
CTL HEAD(-)
CTL HEAD(+)


IC7504
RESET
N.SW 5V
IR7501
IR RECEIVER
N.SW 5V
DP7501
TIMER DISPLAY
F+
52
F-
1
P1
P33
1G
8G
IC6101
P.FAIL L 78
REMOCON 14
IC7503
RESET
RESET L 34
5V (D) 37
12M START H 43
N.SW 5V
FROM POWER
H.DC (+)
H.DC (-)
UNREG -23V
52
59
62
94
100 VPP
12MHz IN 38
X6001
12MHz OUT 39
32KHz IN 35
X6002
32KHz OUT 36
IIC CLOCK 71
IIC DATA 72
IIC CLOCK
IIC DATA
FLD CS 64
FLD / T2 CLK 70
FLD / T2 DATA OUT 68
FLD / T2 DATA IN 69
36 CS
3 CLK
2 DATA IN
POWER S4806
T.REC S4805
REC S4804
REW S4803
FF S4802
PP4801 / PS7501 8
N.SW 5V
16 KEY0
EJECT S4808
CH DN S4807
PP4801 / PS7501 9
17 KEY1
CH UP S4811
STOP S4810
PLAY S4809
PP4801 / PS7501 10
18 KEY2
AV_ENHANCER S7508
DVD-RAM DUB S7501
OPEN / CLOSE S7506
PP4801 / PS7501 11
19 KEY3
D_PLAY S7504
D_STOP S7503
PP4801 / PS7501 12
20 KEY4

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB SYSCON & SERVO
BLOCK DIAGRAM

17.5. DVD VIDEO BLOCK DIAGRAM

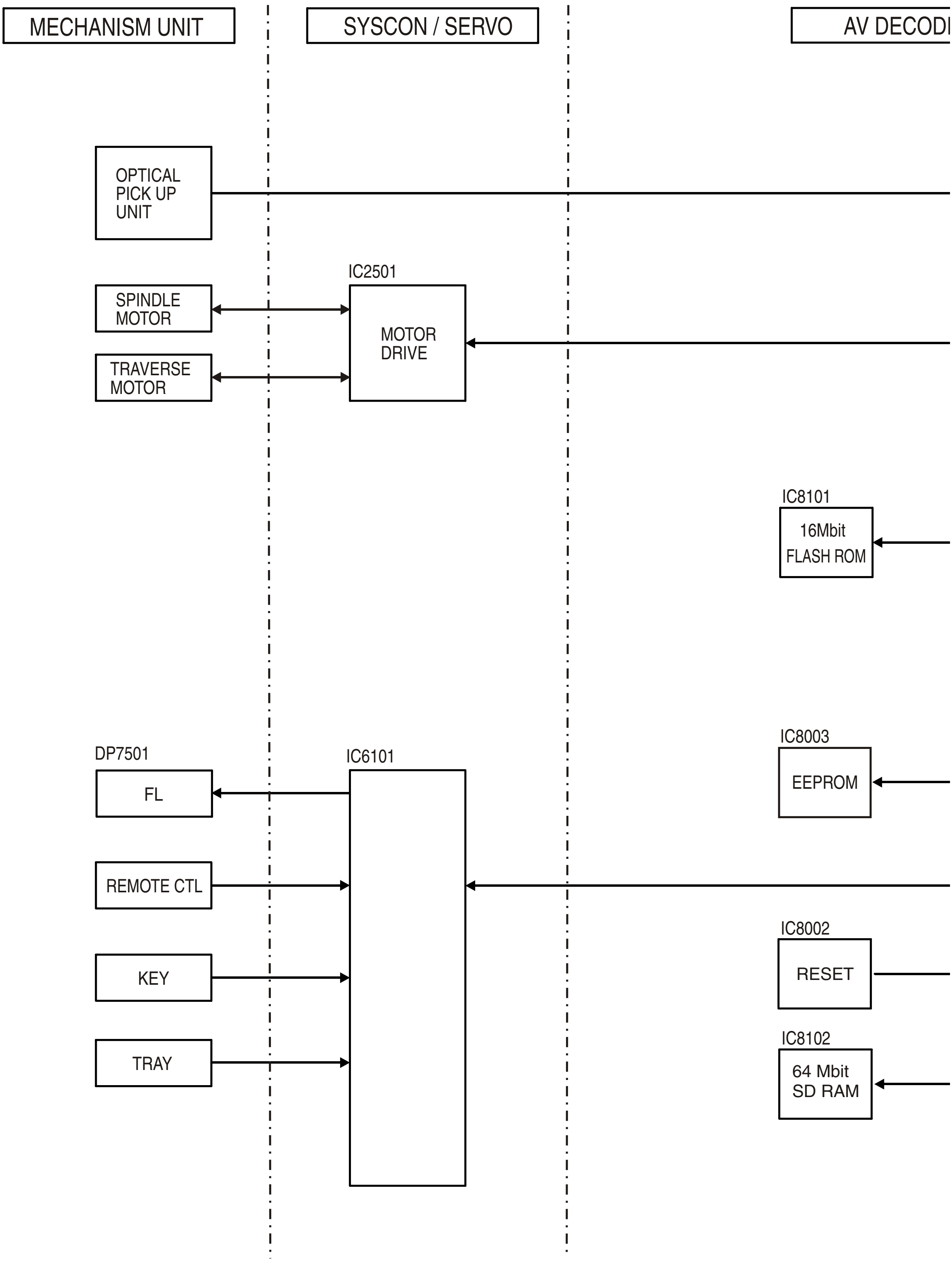

IC8001-151
0.68Vp-p(20usec./div.)
IC8001-152
0.68Vp-p(20usec./div.)
AV DECODER PCB
IC8001
(AV DECORDER)
EXADR16
DATA
EXADR20
DAC2OUT 151
B/Pb
DAC1OUT 149
G/Y
DAC3OUT 152
R/Pr
IC8101
(16Mbit FlashROM)
A20
A16
EXADR16 20
A0
A15
XWE 11
22 NEX WE
XCE 26
38 NEX CE
DAC4OUT 156
CVBS
XOE 28
52 NEX OE
DQ0
DQ15
FDT0 15
FDT0
FDT15
MA0
MEMORY
ADDRESS
12bit
MA11
BA0 234
BA1 232
MDQ0
MEMORY
DATA
32bit
MDQ15
EXADT0
EXADT0 15
EXADT15
NCSM 240
NRAS 244
NCAS 245
NWE 248
MCKI 241
X8001
27
MHz
165 OSC1
166 OSC0

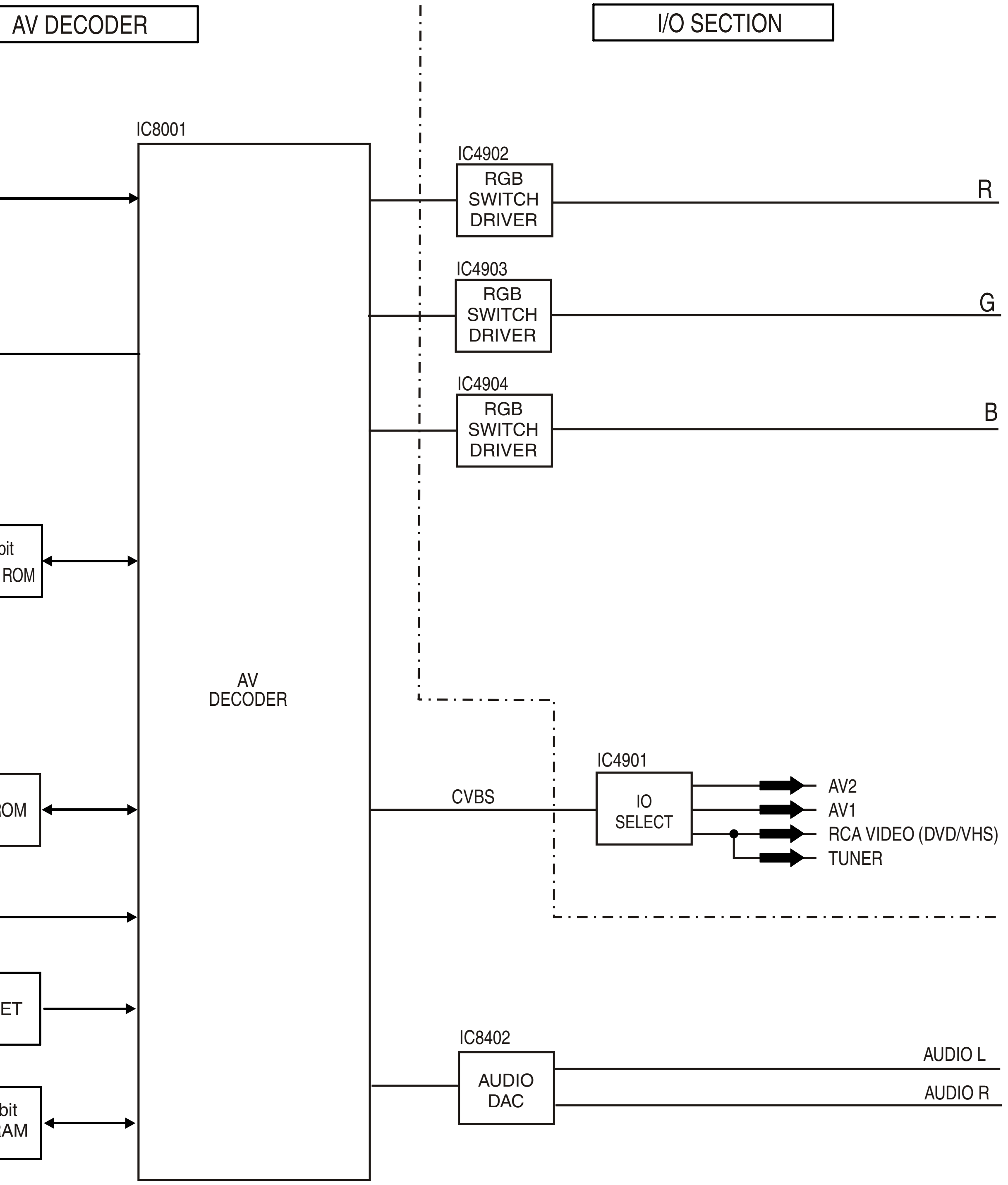


IC8001-149
0.64Vp-p(20usec./div.)
IC8001-156
1.2Vp-p(20usec/div)
div.)
div.)
I/O SECTION
B/Pb
G/Y
R/Pr
PS8003 5
P4301 5
PS8003 3
P4301 3
PS8003 4
P4301 4
IC4904
IC4903
IC4902
AV1
AV2
B
G
R
IC8102
(64Mbit SDRAM)
MA0
MA11
MEMORY ADDRESS 12bit
BA0
BA1
MDQ0
MDQ15
MEMORY DATA 32bit
CS
RAS
CAS
WE
CLK
Y
Pb
Pr
JK4904 7
JK4904 5
JK4904 6
IC4905
PROGRESSIVE
FILTER / DRIVER
IC4901
IO SELECTOR
JK4902 AV2
JK4902 AV1
JK4903 RCA VIDEO (DVD/VHS)
TU7601 TUNER

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
DVD VIDEO
BLOCK DIAGRAM

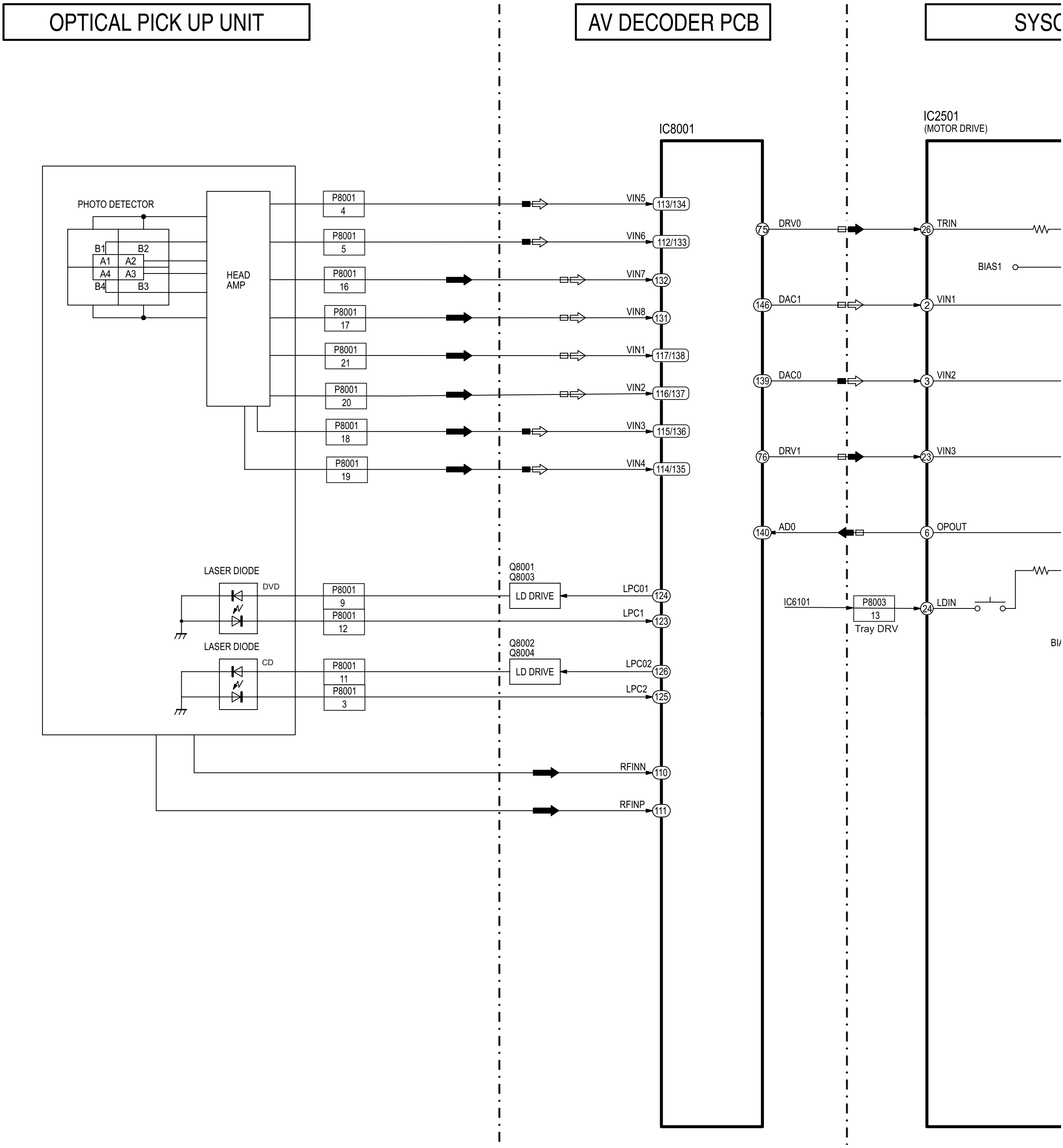
17.6. DVD OVERALL BLOCK DIAGRAM

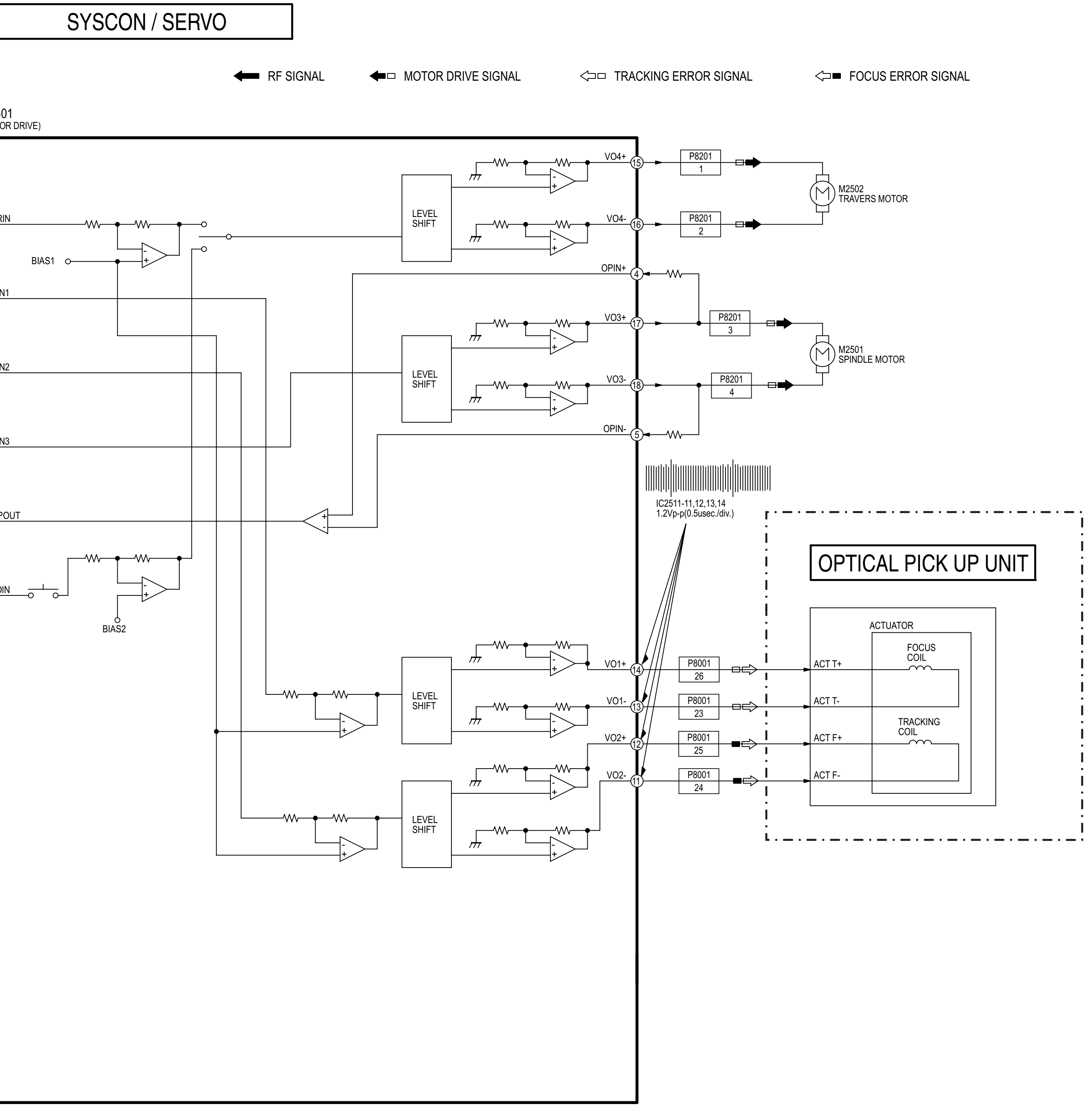

MECHANISM UNIT
SYSCON / SERVO
AV DECODI
OPTICAL PICK UP UNIT
IC2501
SPINDLE MOTOR
MOTOR DRIVE
TRAVERSE MOTOR
IC8101
16Mbit FLASH ROM
IC8003
EEPROM
DP7501
IC6101
FL
REMOTE CTL
IC8002
RESET
KEY
IC8102
64 Mbit SD RAM
TRAY


AV DECODER
I/O SECTION
IC8001
AV
DECODER
bit
ROM
OM
ET
bit
AM
IC4902
RGB
SWITCH
DRIVER
R
IC4903
RGB
SWITCH
DRIVER
G
IC4904
RGB
SWITCH
DRIVER
B
CVBS
IC4901
IO
SELECT
AV2
AV1
RCA VIDEO (DVD/VHS)
TUNER
IC8402
AUDIO
DAC
AUDIO L
AUDIO R

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
DVD OVERALL
BLOCK DIAGRAM

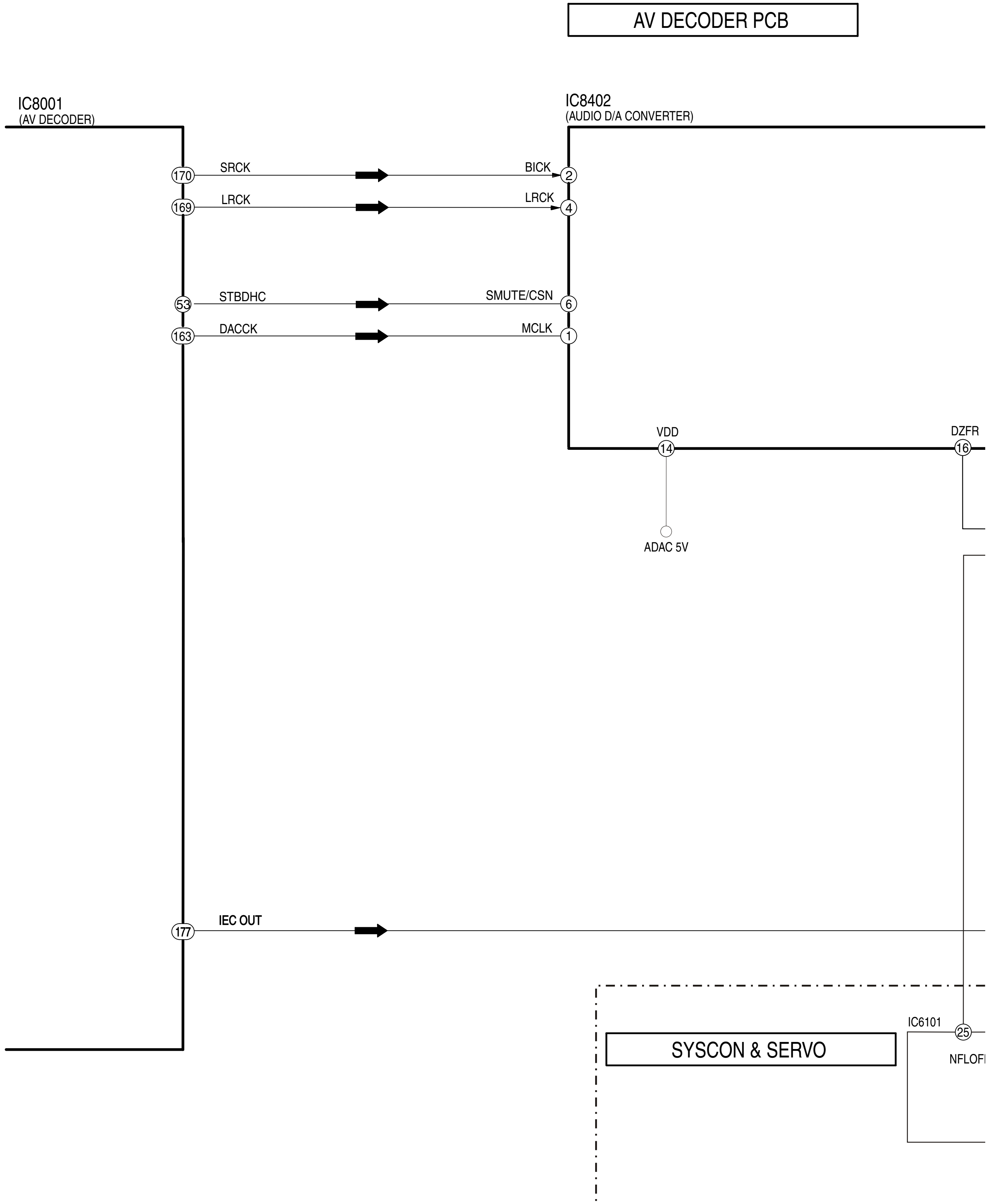
17.7. DVD SERVO BLOCK DIAGRAM

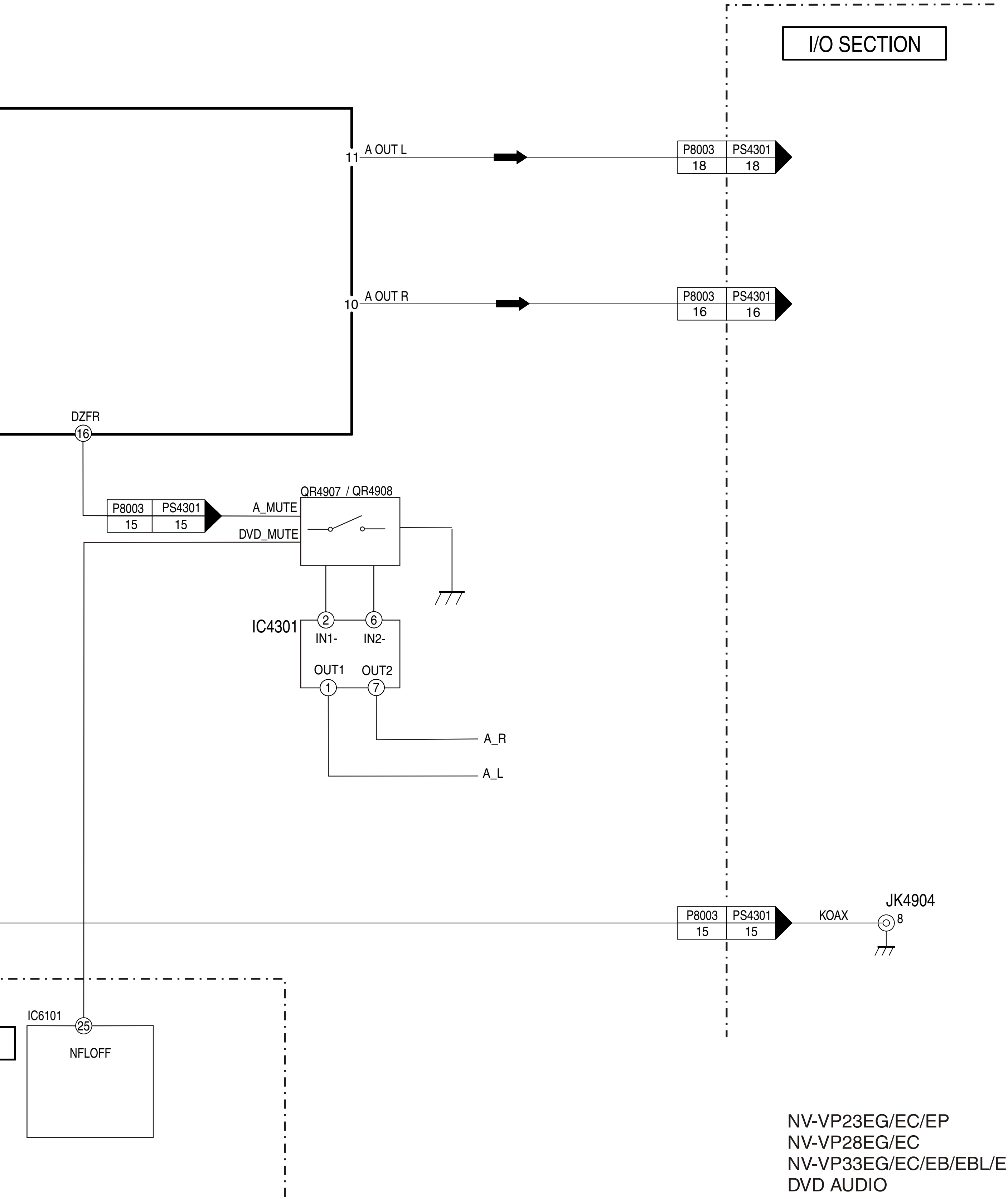

OPTICAL PICK UP UNIT
AV DECODER PCB
SYSC
PHOTO DETECTOR
B1
B2
A1
A2
A4
A3
B4
B3
HEAD AMP
P8001 4
P8001 5
P8001 16
P8001 17
P8001 21
P8001 20
P8001 18
P8001 19
LASER DIODE
DVD
P8001 9
P8001 12
LASER DIODE
CD
P8001 11
P8001 3
Q8001
Q8003
LD DRIVE
Q8002
Q8004
LD DRIVE
IC8001
VIN5 113/134
VIN6 112/133
VIN7 132
VIN8 131
VIN1 117/138
VIN2 116/137
VIN3 115/136
VIN4 114/135
LPC01 124
LPC1 123
LPC02 126
LPC2 125
RFINN 110
RFINP 111
75 DRV0
146 DAC1
139 DAC0
76 DRV1
140 AD0
IC6101
P8003 13
Tray DRV
IC2501
(MOTOR DRIVE)
26 TRIN
BIAS1
2 VIN1
3 VIN2
23 VIN3
6 OPOUT
24 LDIN
BI


SYSCON / SERVO
RF SIGNAL
MOTOR DRIVE SIGNAL
TRACKING ERROR SIGNAL
FOCUS ERROR SIGNAL
01
OR DRIVE)
RIN
BIAS1
N1
N2
N3
POUT
DIN
BIAS2
LEVEL SHIFT
LEVEL SHIFT
LEVEL SHIFT
LEVEL SHIFT
VO4+ 15
VO4- 16
OPIN+ 4
VO3+ 17
VO3- 18
OPIN- 5
VO1+ 14
VO1- 13
VO2+ 12
VO2- 11
P8201 1
P8201 2
P8201 3
P8201 4
M2502 TRAVERS MOTOR
M2501 SPINDLE MOTOR
IC2511-11,12,13,14
1.2Vp-p(0.5usec./div.)
OPTICAL PICK UP UNIT
ACTUATOR
FOCUS COIL
TRACKING COIL
P8001 26
P8001 23
P8001 25
P8001 24
ACT T+
ACT T-
ACT F+
ACT F-

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DVD SERVO SECTION
BLOCK DIAGRAM

17.8. DVD AUDIO BLOCK DIAGRAM

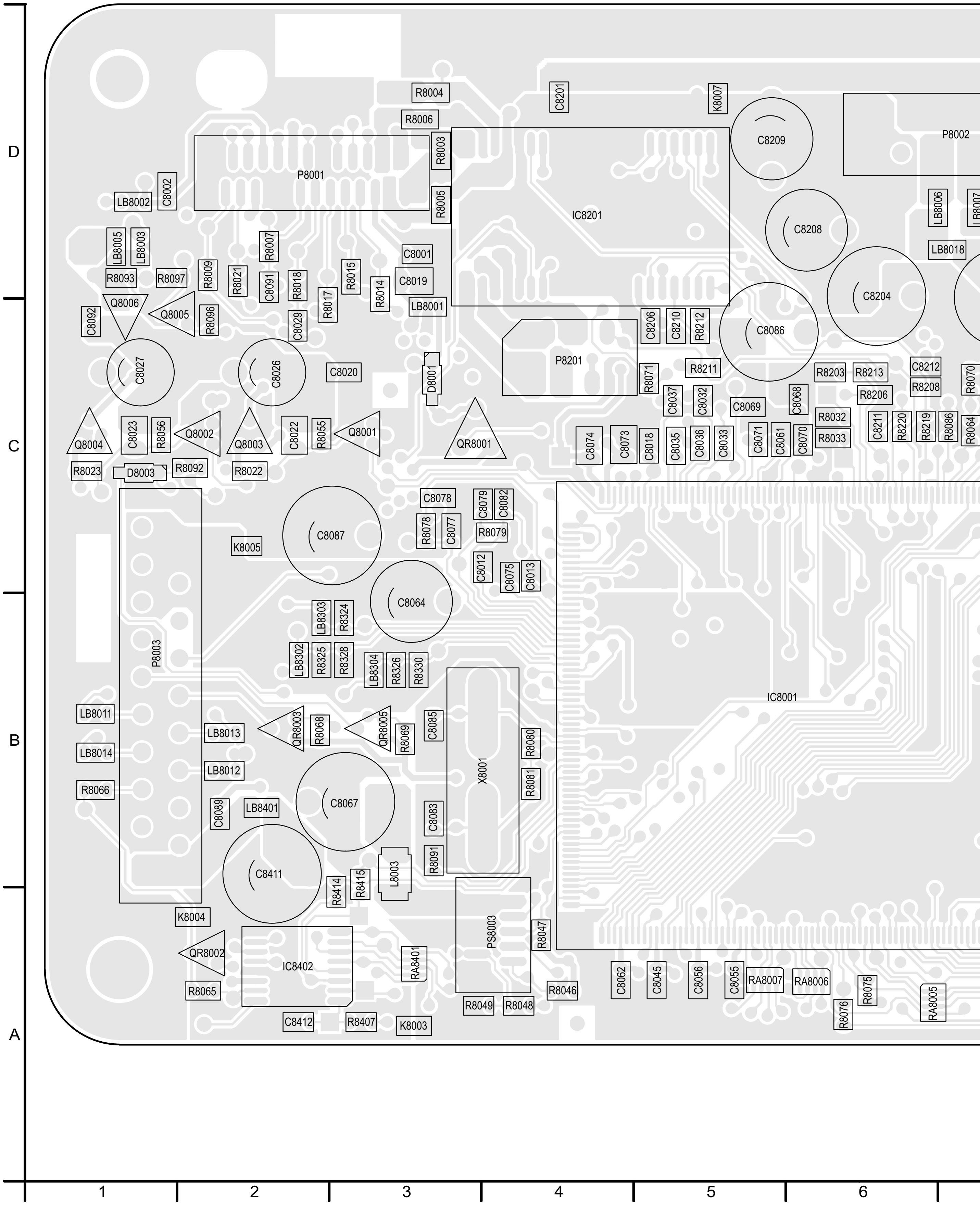

AV DECODER PCB
IC8001
(AV DECODER)
IC8402
(AUDIO D/A CONVERTER)
170
SRCK
BICK
2
169
LRCK
LRCK
4
53
STBDHC
SMUTE/CSN
6
163
DACCK
MCLK
1
VDD
14
ADAC 5V
DZFR
16
177
IEC OUT
SYSCON & SERVO
IC6101
25
NFLOF

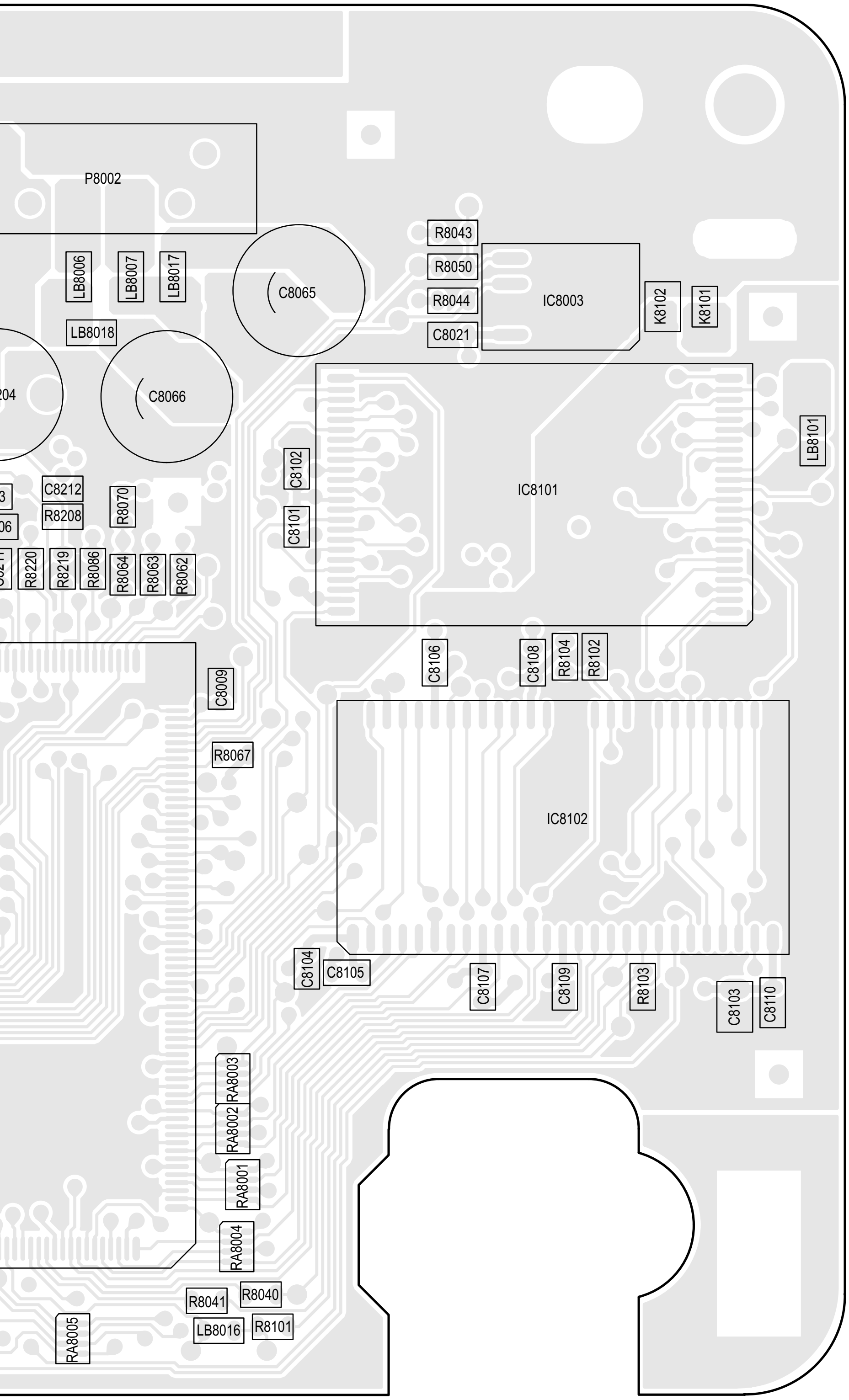

I/O SECTION
11
A OUT L
P8003
PS4301
18
18
10
A OUT R
P8003
PS4301
16
16
DZFR
16
P8003
PS4301
15
15
A_MUTE
DVD_MUTE
QR4907 / QR4908
IC4301
2
6
IN1-
IN2-
OUT1
OUT2
1
7
A_R
A_L
P8003
PS4301
15
15
KOAX
JK4904
8
IC6101
25
NFLOFF

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DVD AUDIO
BLOCK DIAGRAM

19.5. DECODER PCB (COMPONENT SIDE)

(REPD0011A)


D
C
B
A
1
2
3
4
5
6
R8004
R8006
C8201
K8007
C8209
P8002
P8001
R8003
IC8201
R8005
LB8002
C8002
C8208
LB8006
LB8018
LB8005
LB8003
R8007
C8001
R8093
R8097
R8009
R8021
C8091
R8018
R8015
C8019
R8014
C8204
Q8006
Q8005
R8096
R8017
LB8001
C8092
C8029
C8206
C8210
R8212
C8086
P8201
C8027
C8026
C8020
D8001
R8071
R8211
R8203
R8213
C8212
R8208
R8070
R8206
C8037
C8032
C8069
C8068
R8032
C8211
R8220
R8219
R8086
R8064
Q8004
C8023
R8056
Q8002
Q8003
C8022
R8055
Q8001
QR8001
C8074
C8073
C8018
C8035
C8036
C8033
C8071
C8061
C8070
R8033
R8023
D8003
R8092
R8022
C8078
C8079
C8082
C8087
R8078
C8077
R8079
K8005
C8012
C8075
C8013
C8064
LB8303
R8324
P8003
LB8302
R8325
R8328
LB8304
R8326
R8330
IC8001
LB8011
LB8013
QR8003
R8068
QR8005
R8069
C8085
R8080
LB8014
LB8012
X8001
R8081
R8066
C8089
LB8401
C8067
C8083
L8003
C8411
R8091
R8414
R8415
K8004
PS8003
R8047
QR8002
IC8402
RA8401
R8065
C8062
C8045
C8056
C8055
RA8007
RA8006
R8075
RA8005
R8046
R8049
R8048
R8076
C8412
R8407
K8003


P8002
R8043
R8050
R8044
C8021
IC8003
K8102
K8101
LB8006
LB8007
LB8017
C8065
LB8018
C8066
LB8101
C8212
R8208
R8070
C8102
C8101
IC8101
R8220
R8219
R8086
R8064
R8063
R8062
C8106
C8108
R8104
R8102
C8009
R8067
IC8102
C8104
C8105
C8107
C8109
R8103
C8103
C8110
RA8003
RA8002
RA8001
RA8004
R8041
R8040
LB8016
R8101
RA8005
7
8
9
10
11
12

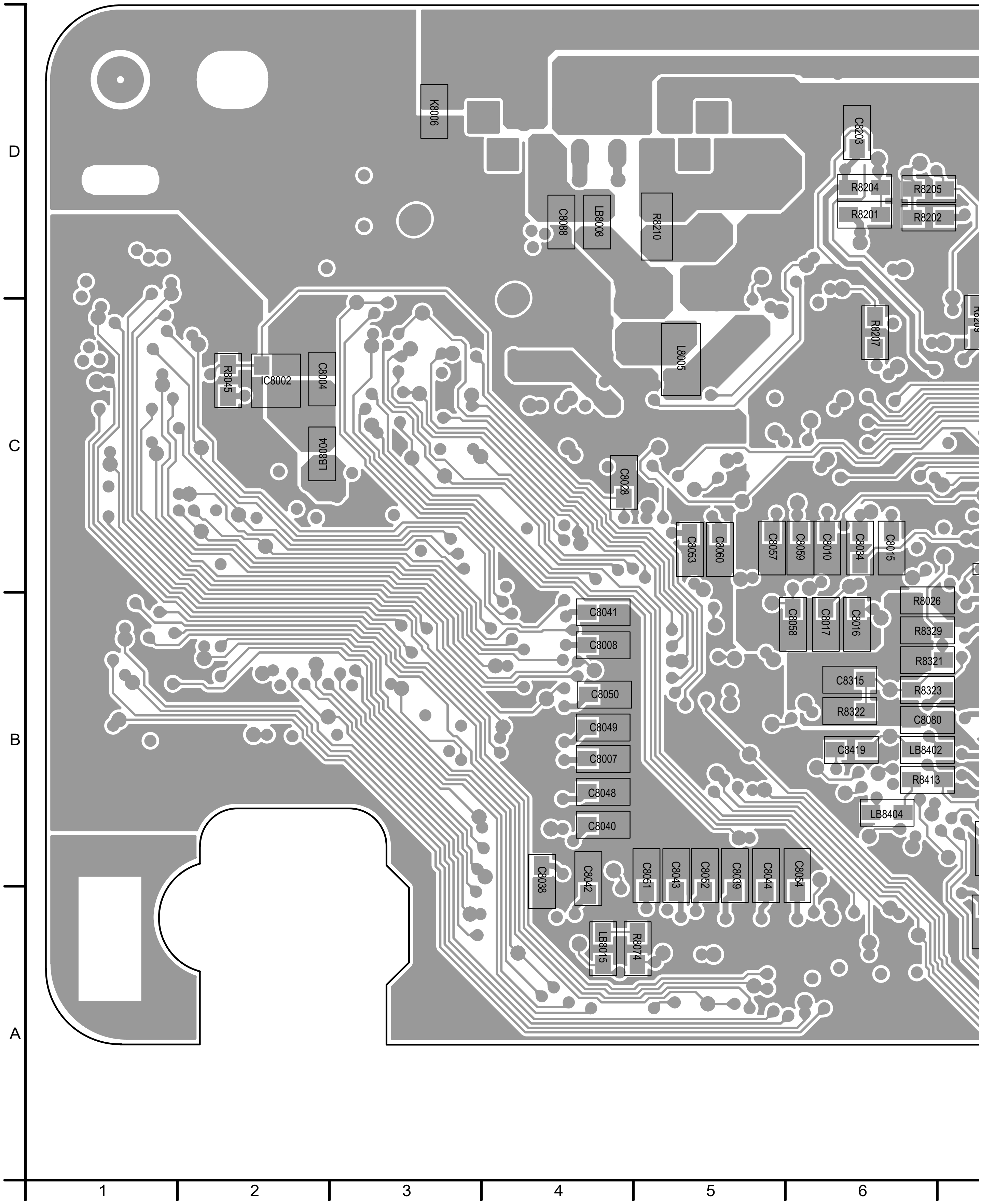
DECODER PCB	
IC8001	B5
IC8003	D9
IC8101	C9
IC8102	B9
IC8201	D5
IC8402	A2
Q8001	C3
Q8002	C2
Q8003	C2
Q8004	C1
Q8005	C1
Q8006	C1
QR8001	C3
QR8002	A2
QR8003	B2
QR8005	B3
P8001	D2
P8002	D7
P8003	B1
P8201	C4
PS8003	A4
X8001	B3

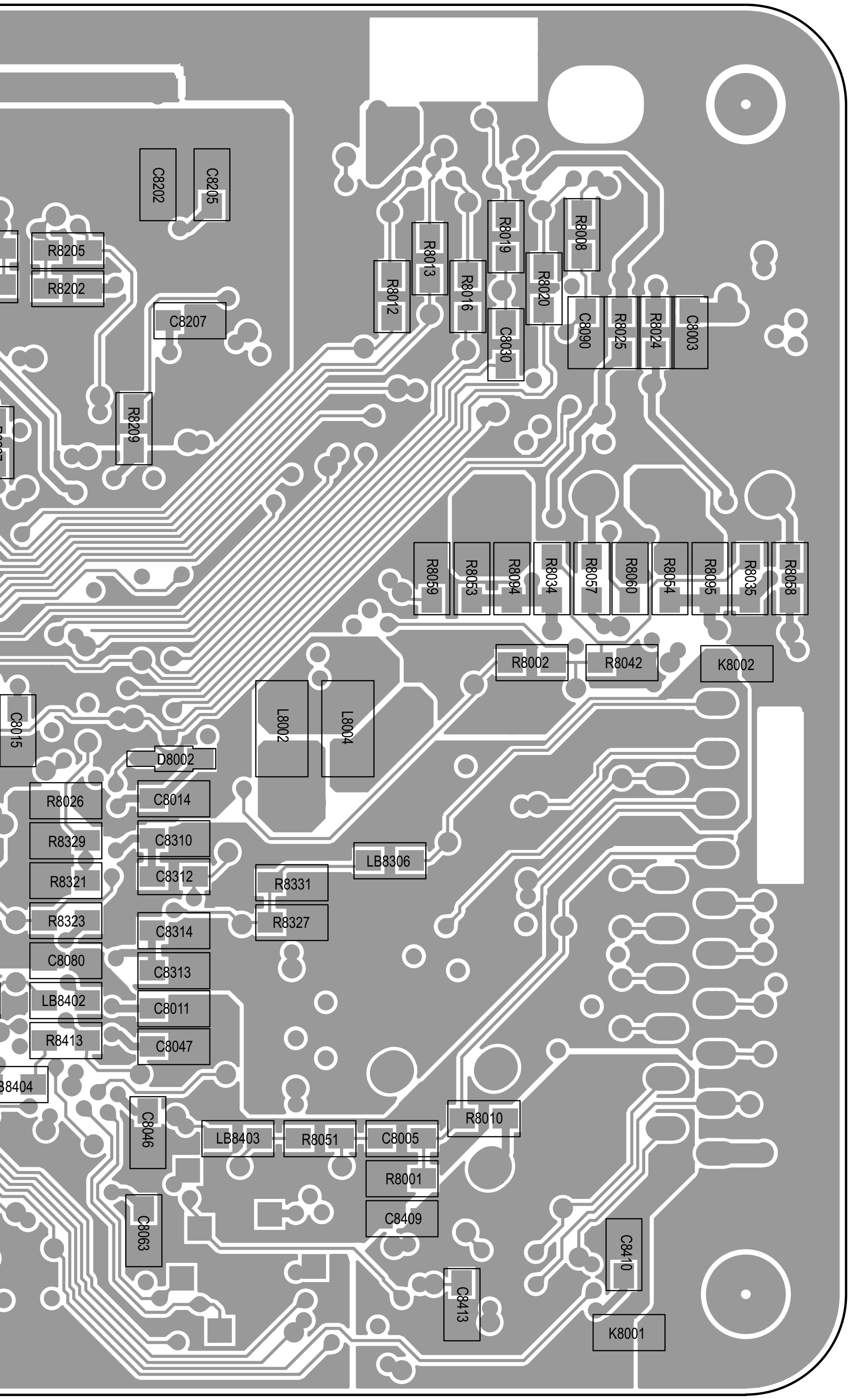
ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DECODER PCB
COMPONENT SIDE

19.6. DECODER PCB (SOLDER SIDE)

(REPD0011A)


D
C
B
A
1
2
3
4
5
6
K8006
C8203
R8204
R8205
R8201
R8202
C8088
LB8008
R8210
R8207
L8005
R8045
IC8002
C8004
LB8004
C8028
C8053
C8060
C8057
C8059
C8010
C8034
C8015
R8026
R8329
R8321
R8323
C8080
LB8402
R8413
C8058
C8017
C8016
C8315
R8322
C8419
LB8404
C8041
C8008
C8050
C8049
C8007
C8048
C8040
C8038
C8042
C8051
C8043
C8052
C8039
C8044
C8054
LB8015
R8074


C8202
C8205
R8205
R8202
C8207
R8012
R8013
R8016
R8019
C8030
R8020
R8008
C8090
R8025
R8024
C8003
R8209
R8059
R8053
R8094
R8034
R8057
R8060
R8054
R8095
R8035
R8058
R8002
R8042
K8002
C8015
L8002
L8004
D8002
R8026
C8014
R8329
C8310
R8321
C8312
LB8306
R8331
R8327
R8323
C8314
C8080
C8313
LB8402
C8011
R8413
C8047
38404
C8046
LB8403
R8051
C8005
R8010
R8001
C8063
C8409
C8413
C8410
K8001

DECODER PCB	
IC8002	C2

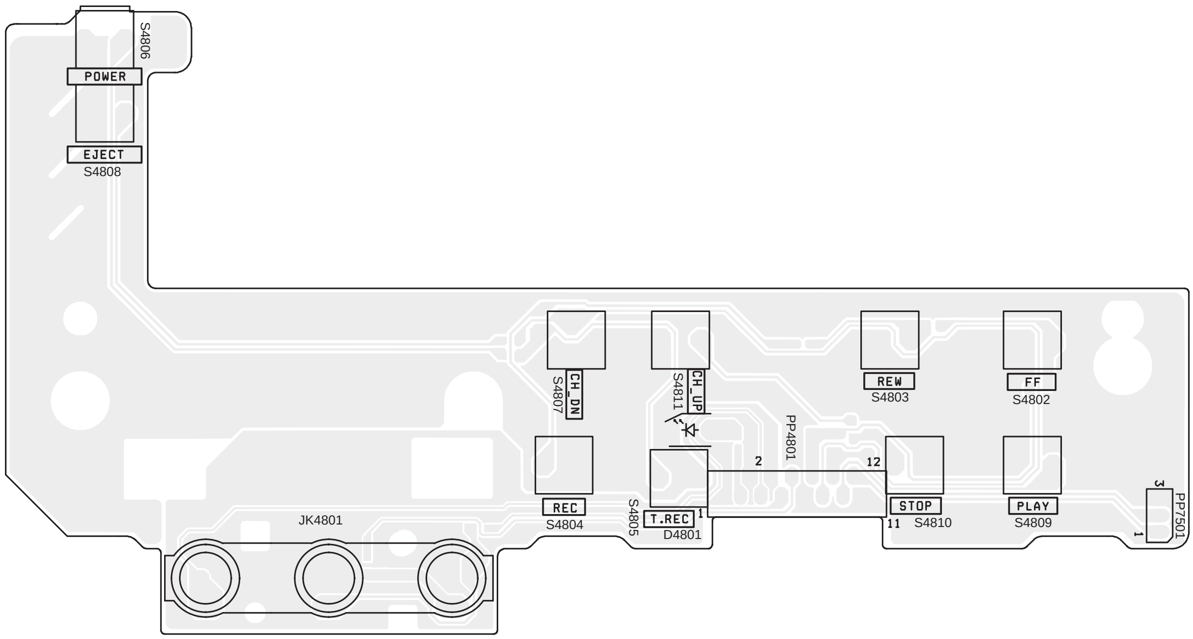
ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DECODER PCB
SOLDER SIDE

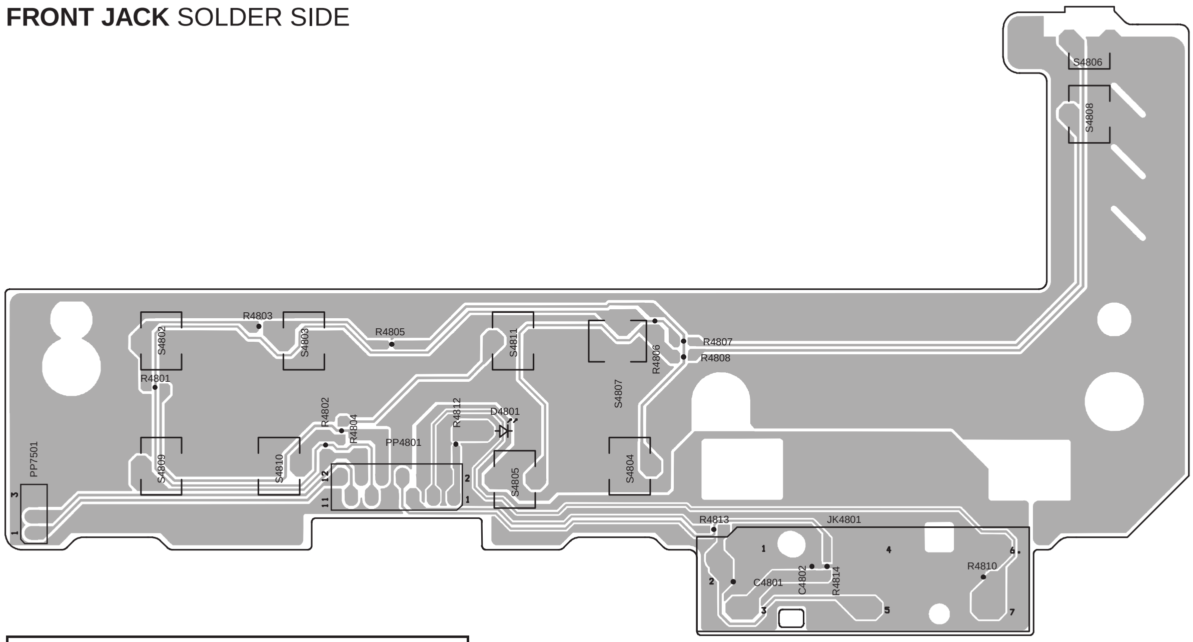
7 8 9 10 11 12

19.8. FRONT PCB

FRONT JACK COMPONENT SIDE (REPD0014A)


S4806
POWER
EJECT
S4808
CH_DN
S4807
CH_UP
S4811
REW
S4803
FF
S4802
PP4801
2
12
REC
S4804
S4805
T.REC
D4801
1
STOP
11
S4810
PLAY
S4809
3
PP7501
1
JK4801

FRONT JACK SOLDER SIDE


S4806
S4808
R4803
S4802
S4803
R4805
S4811
R4807
R4808
R4806
R4801
S4807
R4802
R4804
R4812
D4801
PP4801
PP7501
3
1
S4809
S4810
12
11
2
1
S4805
S4804
R4813
JK4801
1
4
6
R4810
2
C4801
C4802
R4814
3
5
7

FRONT JACK PCB					
	Component	Solder		Component	Solder
JK4801	B2	B1	S4806	D1	C6
PP4801	C4	B3	S4807	C4	B4
PP7501	C6	B1	S4808	D1	B6
S4802	C6	B2	S4809	C6	B1
S4803	C5	B2	S4810	C5	B2
S4804	C4	B4	S4811	C4	B3
S4805	C4	B3			

ADRESS INFORMATION

D

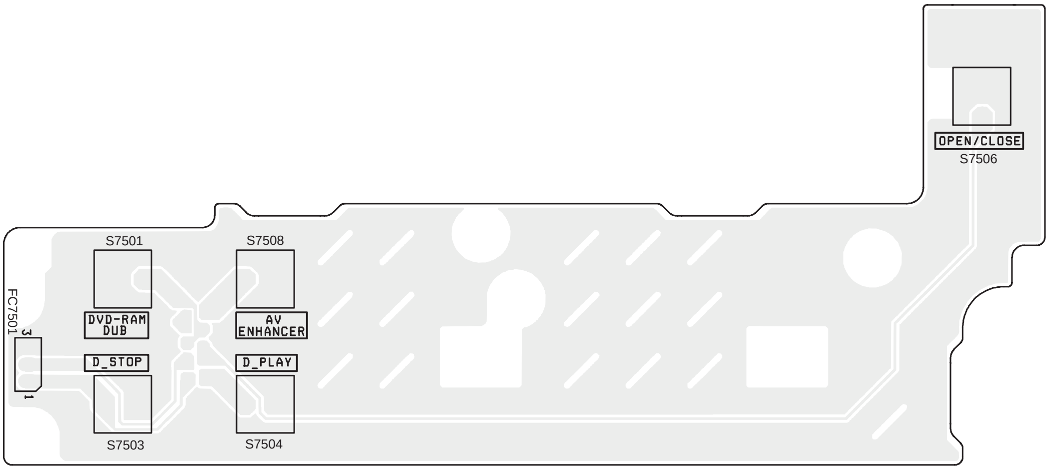
C

B

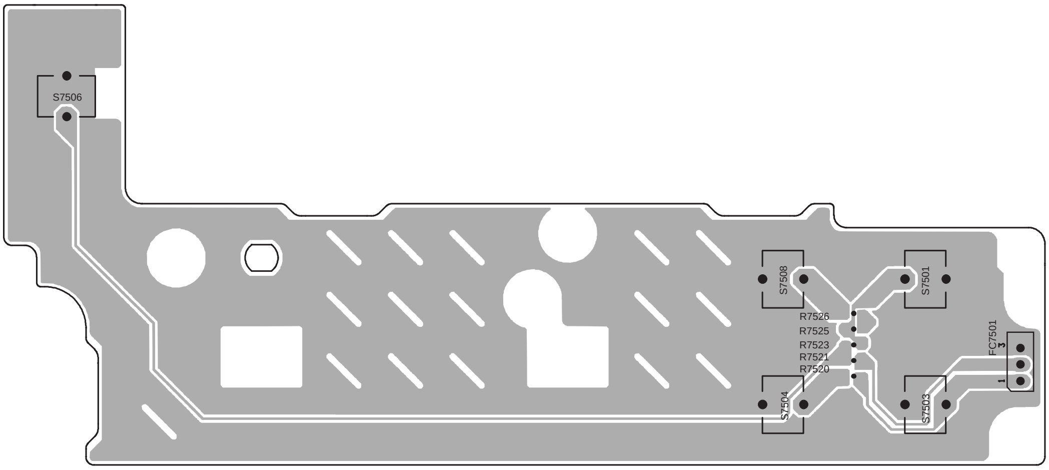
A

1 2 3 4 5 6

FRONT SWITCH COMPONENT SIDE (REPD0013A)


OPEN/CLOSE
S7506
S7501
S7508
FC7501
3
1
DVD-RAM DUB
AV ENHANCER
D_STOP
D_PLAY
S7503
S7504

FRONT SWITCH SOLDER SIDE


S7506
S7508
S7501
R7526
R7525
R7523
R7521
R7520
FC7501
3
1
S7504
S7503

FRONT SWITCH PCB		
	Component	Solder
FC7501	C7	B11
S7501	C7	B11
S7503	C7	B11
S7504	C8	B10
S7506	D11	B7
S7508	C8	B10

ADRESS INFORMATION

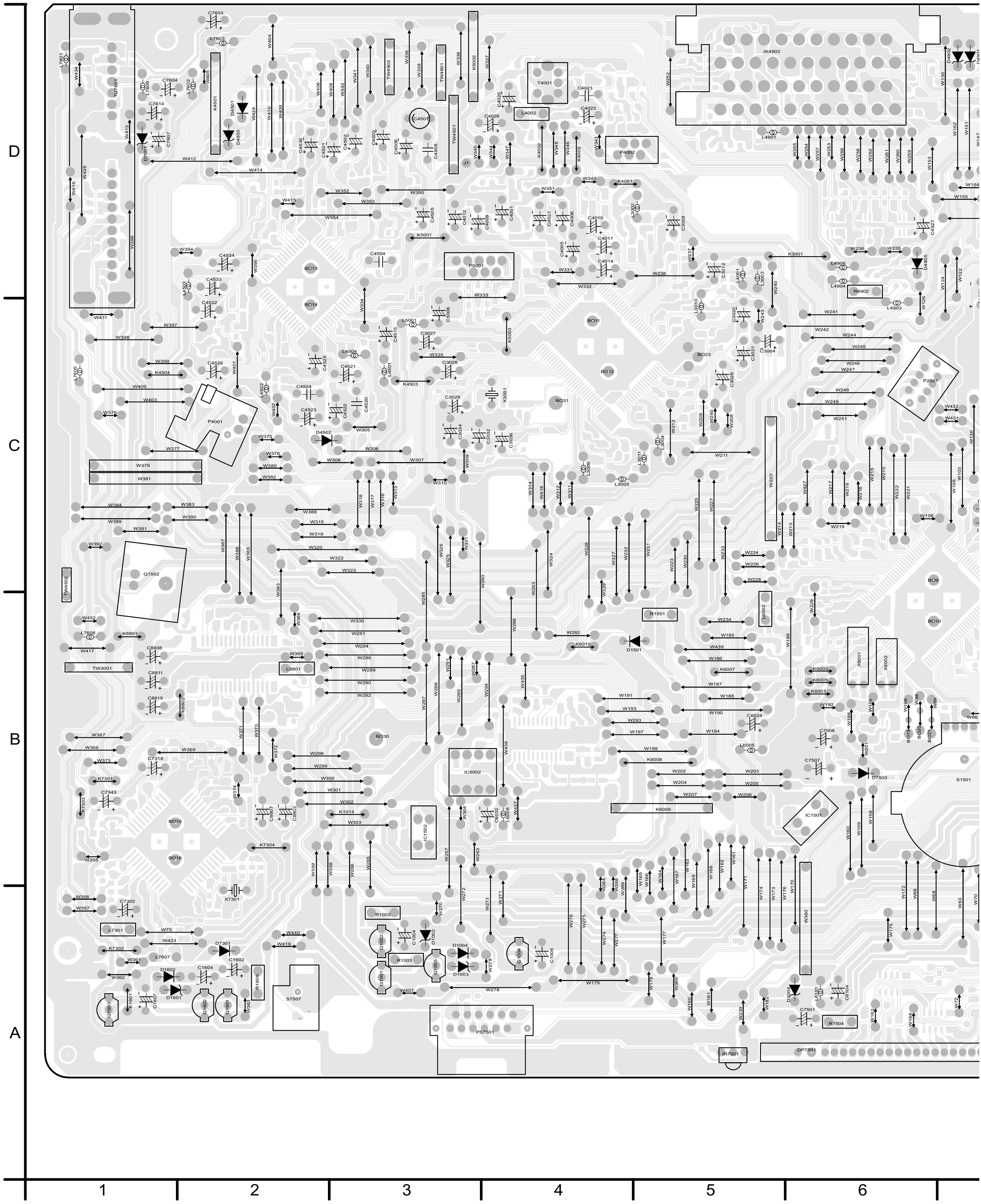
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
FRONT JACK PCB / FRONT SWITCH PCB
COMPONENT SIDE / SOLDER SIDE

7 8 9 10 11 12

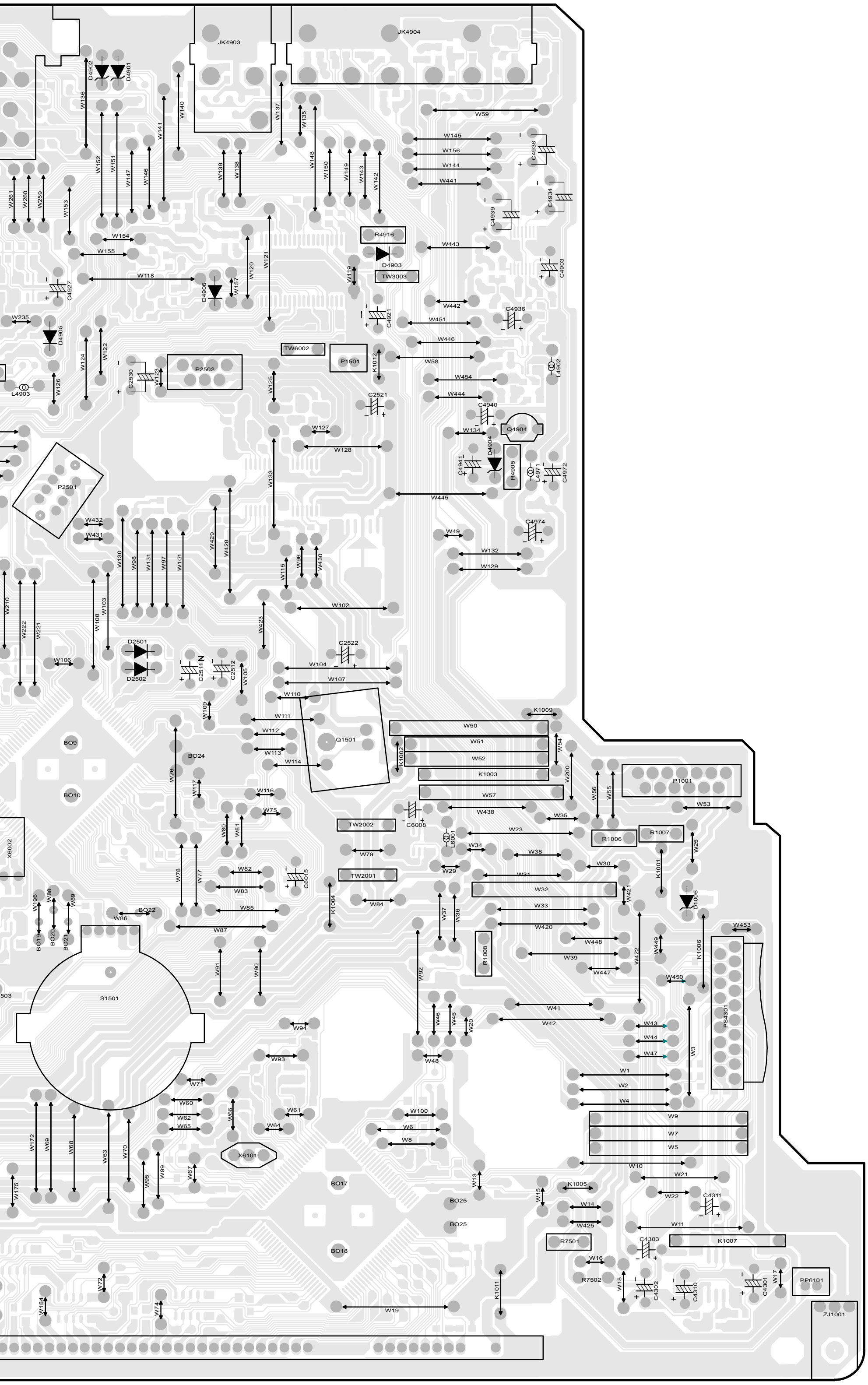
19 PRINTED CIRCUIT BOARD

19.1. MAIN PCB (COMPONENT SIDE)

(REPD0010A: NV-VP28EG / NV-VP33EG) (REPD0010B: NV-VP28EC / NV-VP33EC) (REPD0010C: NV-
(REPD0010F: NV-VP23EG) (REPD0010G: NV-VP23EC) (REPD0010J: NV-VP23EP)


D
C
B
A
1
2
3
4
5
6
JK4902
T4001
P4002
P4001
P5001
P2501
Q1502
IC6002
IC1502
IC1501
S1501
S7507
PS7501
DP7501
IR7501
TU7601
X3001
X7301
BO11
BO12
BO13
BO14
BO15
BO16
BO23
BO30
BO31
BO9
BO10
R1501
R1002
R1003
R4902
R7504
D1501
D7503
D4502
D7301
K6009
TW3001
TW4501
TW4502
TW4901
TW4902

0010C: NV-VP33EB) (REPD0010D: NV-VP33EBL) (REPD0010E: NV-VP33EP)



MAIN PCB	
IC1501	B6
IC1502	B3
IC6002	B3
JK4902	D5
JK4903	D7
JK4904	D8
Q1001	A3
Q1002	A3
Q1003	A3
Q1004	A4
Q1501	C8
Q1502	C1
Q1601	A2
Q1602	A2
Q1603	A1
Q4904	C9
P1001	B9
P1501	D8
P2501	C6
P2502	D7
P4001	C2
P4002	D5
P5001	D3
PS4301	B10
PS7501	A3
DP 7501	A6
PP6101	A10
X3001	C4
X6001	B6
X6002	B6
X6101	A7
X7301	A2
S1501	B7
S7507	A2
TW2001	B8
TW2002	B8
TW3001	B1
TW3003	D8
TW4501	D4
TW4501	D3
TW4502	C1
TW4901	D3
TW4902	D3
TW6002	D8
TU7601	D1

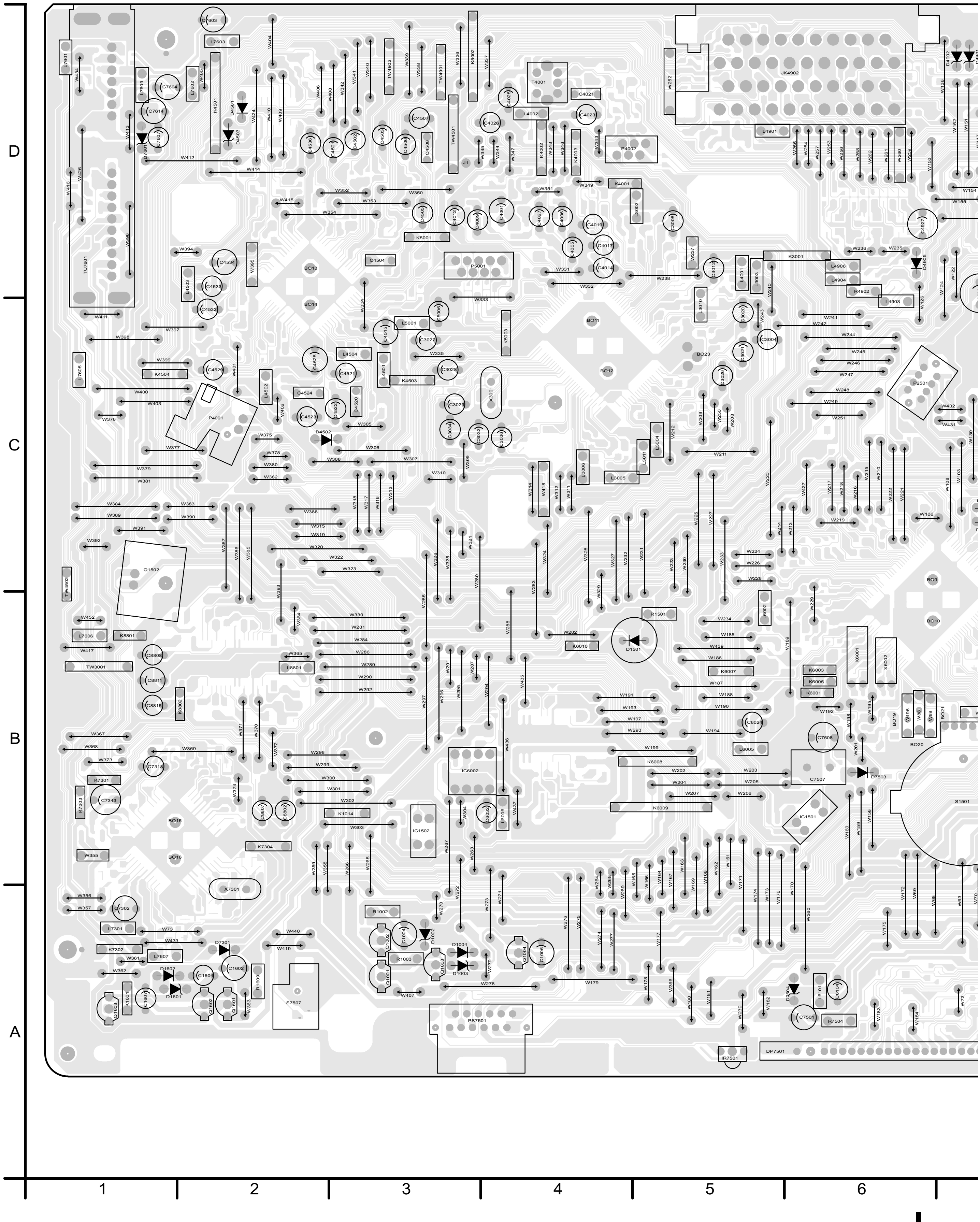
ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
COMPONENT SIDE

7 8 9 10 11 12

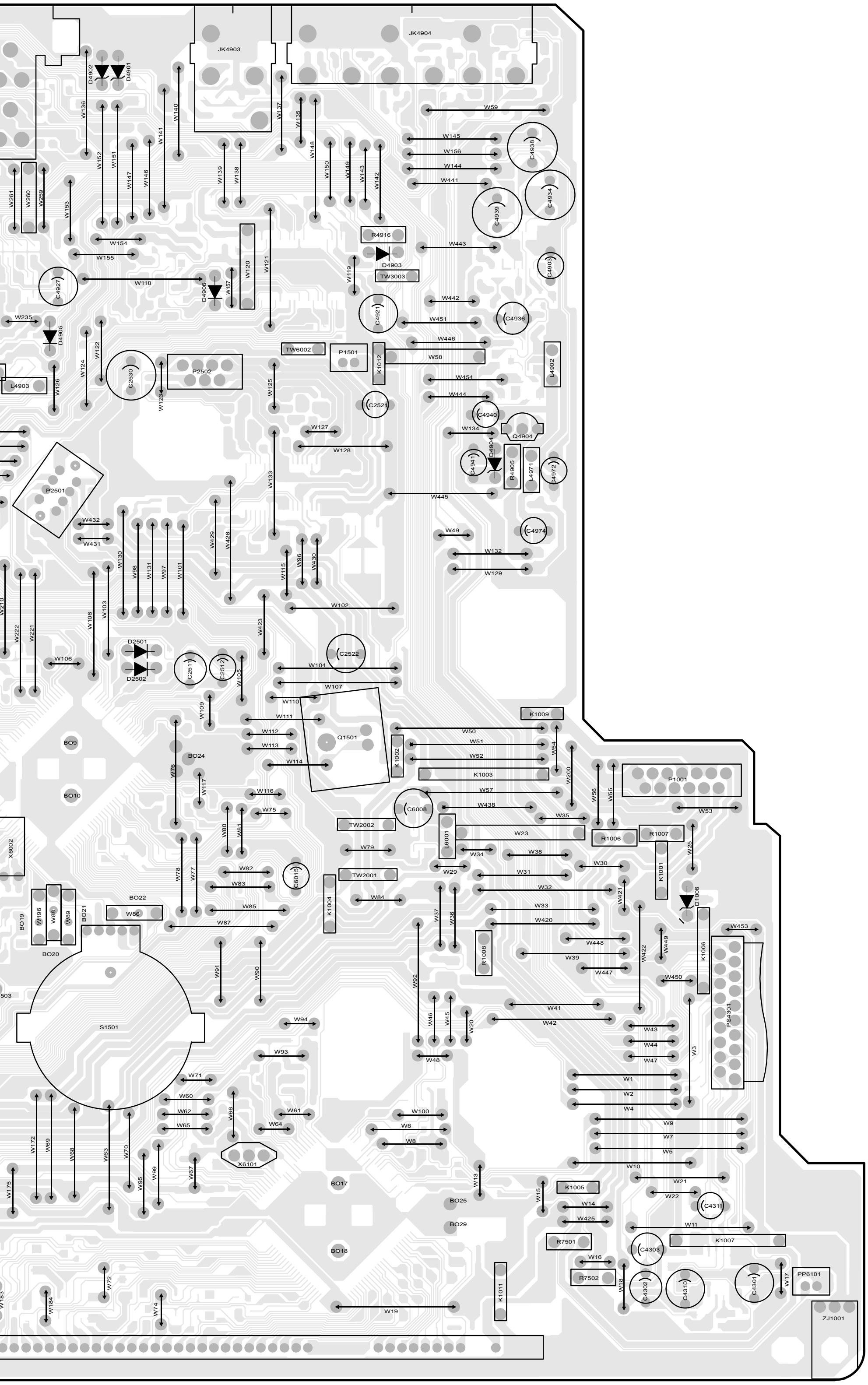
19.3. MAIN PCB (COMPONENT SIDE - ONLY REPD0024x)

(REPD0024A: NV-VP28EG / NV-VP33EG) (REPD0024B: NV-VP28EC / NV-VP33EC) (REPD0024C: NV-



D
C
B
A
1
2
3
4
5
6
TU7601
JK4902
T4001
P4002
P5001
P4001
P2501
Q1502
IC6002
IC1502
IC1501
S1501
S7507
PS7501
DP7501
IR7501
X7301
X3001
X6001
X6002
D1501
R1501
C7507
D7503
C7508
BO11
BO12
BO13
BO14
BO15
BO16
BO19
BO20
BO21
BO23
BO9
BO10
K3001
K4001
K4503
K5001
K6008
K6009
L4901
L4906
L4904
L4903
R4902
C7501
R7504
L6101
C6101
R1002
R1003
Q1001
Q1002
Q1003
Q1004
C1004
C1005
D1002
D1003
D1004
D7301
D7504
K7301
K7302
K7303
K7304
C7343
C7318
C7302
L7301
L7606
K8801
L8801
C8808
C8811
C8815
K8802
TW3001
TW4502

0024C: NV-VP33EB) (REPD0024D: NV-VP33EBL) (REPD0024E: NV-VP33EP)


JK4903
JK4904
D4902
D4901
P2502
P2501
P1501
C2530
C4921
C4936
C4934
C4938
C4939
R4916
D4903
TW3003
TW6002
Q4904
C4940
C4974
D2501
D2502
C2511
C2512
C2522
Q1501
K1009
K1002
K1003
P1001
C6008
TW2002
TW2001
L6001
R1006
R1007
K1001
D1006
K1004
C6013
PS4301
S1501
X6101
X6002
BO9
BO10
BO19
BO20
BO21
BO22
BO24
BO17
BO18
BO25
BO29
K1005
K1007
K1011
R7501
R7502
C4311
C4303
C4302
C4310
C4301
PP6101
ZJ1001

MAIN PCB	
IC1501	B6
IC1502	B3
IC6002	B3
JK4902	D5
JK4903	D7
JK4904	D8
Q1001	A3
Q1002	A3
Q1003	A3
Q1004	A4
Q1501	C8
Q1502	C1
Q1601	A2
Q1602	A2
Q1603	A1
Q4904	C9
P1001	B9
P1501	D8
P2501	C6
P2502	D7
P4001	C2
P4002	D5
P5001	D3
PS4301	B10
PS7501	A3
DP 7501	A6
PP6101	A10
X3001	C4
X6001	B6
X6002	B6
X6101	A7
X7301	A2
S1501	B7
S7507	A2
TW2001	B8
TW2002	B8
TW3001	B1
TW3003	D8
TW4501	D4
TW4501	D3
TW4502	C1
TW4901	D3
TW4902	D3
TW6002	D8
TU7601	D1

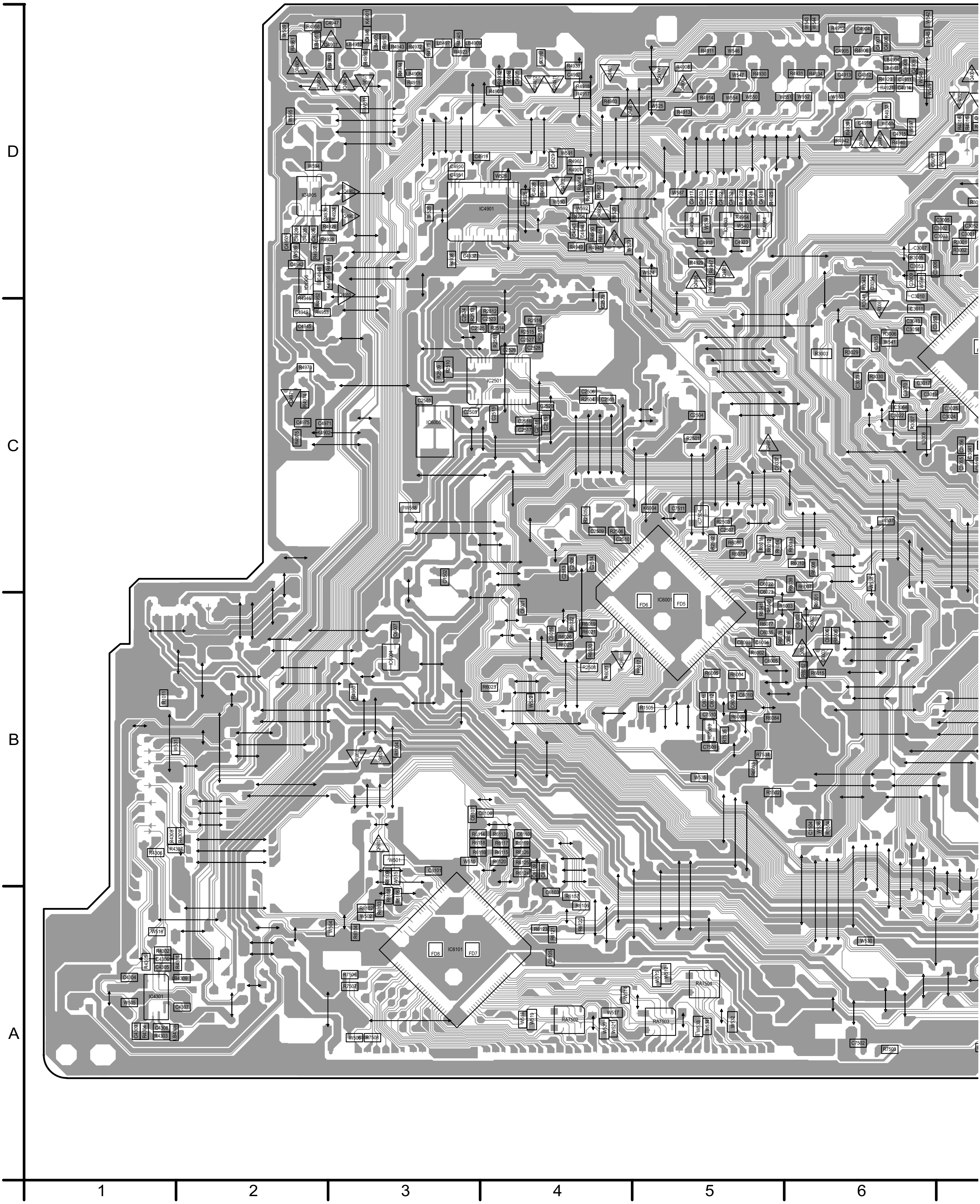
ADRESS INFORMATION

NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
COMPONENT SIDE

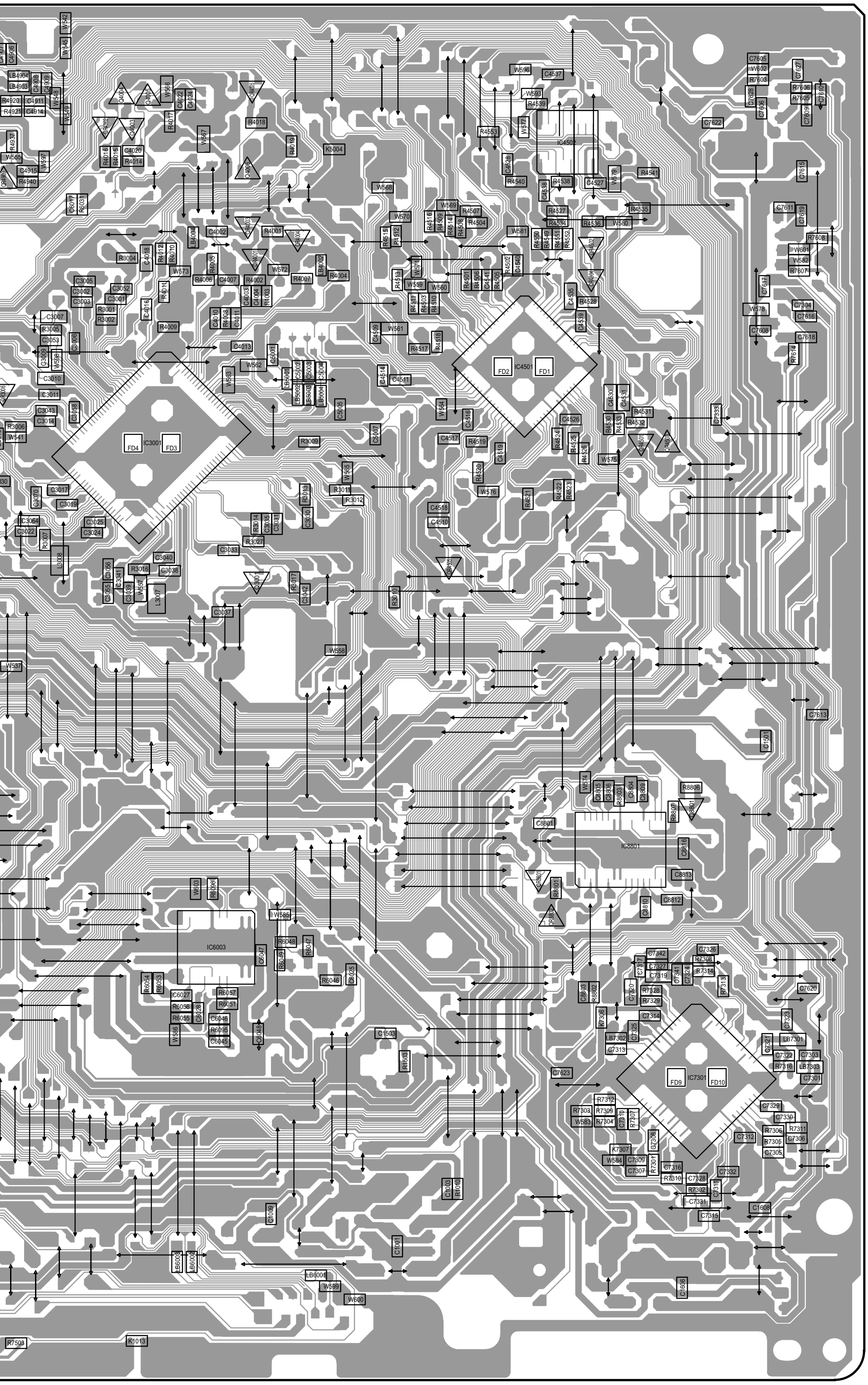
7 8 9 10 11 12

19.4. MAIN PCB (SOLDER SIDE - ONLY REPD0024x)

(REPD0024A: NV-VP28EG / NV-VP33EG) (REPD0024B: NV-VP28EC / NV-VP33EC) (REPD0024C: NV-


D
C
B
A
1
2
3
4
5
6
IC4901
IC4805
IC2501
IC6005
IC6001
IC6101
IC4301
IC6004
FD5
FD6
FD7
FD8

0024C: NV-VP33EB) (REPD0024D: NV-VP33EBL) (REPD0024E: NV-VP33EP)



MAIN PCB			
IC 2501	C4	QR 1001	B3
IC 3001	C7	QR 1002	B3
IC 4301	A1	QR 3006	C6
IC 4501	C9	QR 4001	D7
IC 4901	D4	QR 4002	D7
IC 4902	D5	QR 4003	D7
IC 4903	D5	QR 4004	D8
IC 4904	D5	QR 4005	D7
IC 4905	D2	QR 4501	C9
IC 6001	B5	QR 4502	D9
IC 6003	B7	QR 4503	C10
IC 6004	B3	QR 4504	D9
IC 6005	C3	QR 4505	C8
IC 6101	A3	QR 4901	D4
IC 7301	B10	QR 4902	D4
IC 7503	B5	QR 4903	D4
IC 7504	C5	QR 4904	D5
IC 8801	B9	QR 4905	D2
Q 3001	C7	QR 4906	D4
Q 4003	D7	QR 4907	D3
Q 4004	D7	QR 4908	D2
Q 4005	D7	QR 4909	D6
Q 4006	D7	QR 4910	D6
Q 4901	C5	QR 4911	D4
Q 4902	D3	QR 4912	D4
Q 4903	D3	QR 4913	D4
Q 4905	C5	QR 6001	B4
Q 4906	D5	QR 6101	B3
Q 4907	D3	QR 8801	B9
Q 4908	D3	QR 8802	B9
Q 4909	D4	RA 7502	A4
Q 4910	C3	RA 7503	A5
Q 4971	C2	RA 7504	A5
Q 6001	B6		
Q 6002	B6		
Q 6003	B6		
Q 8801	B10		

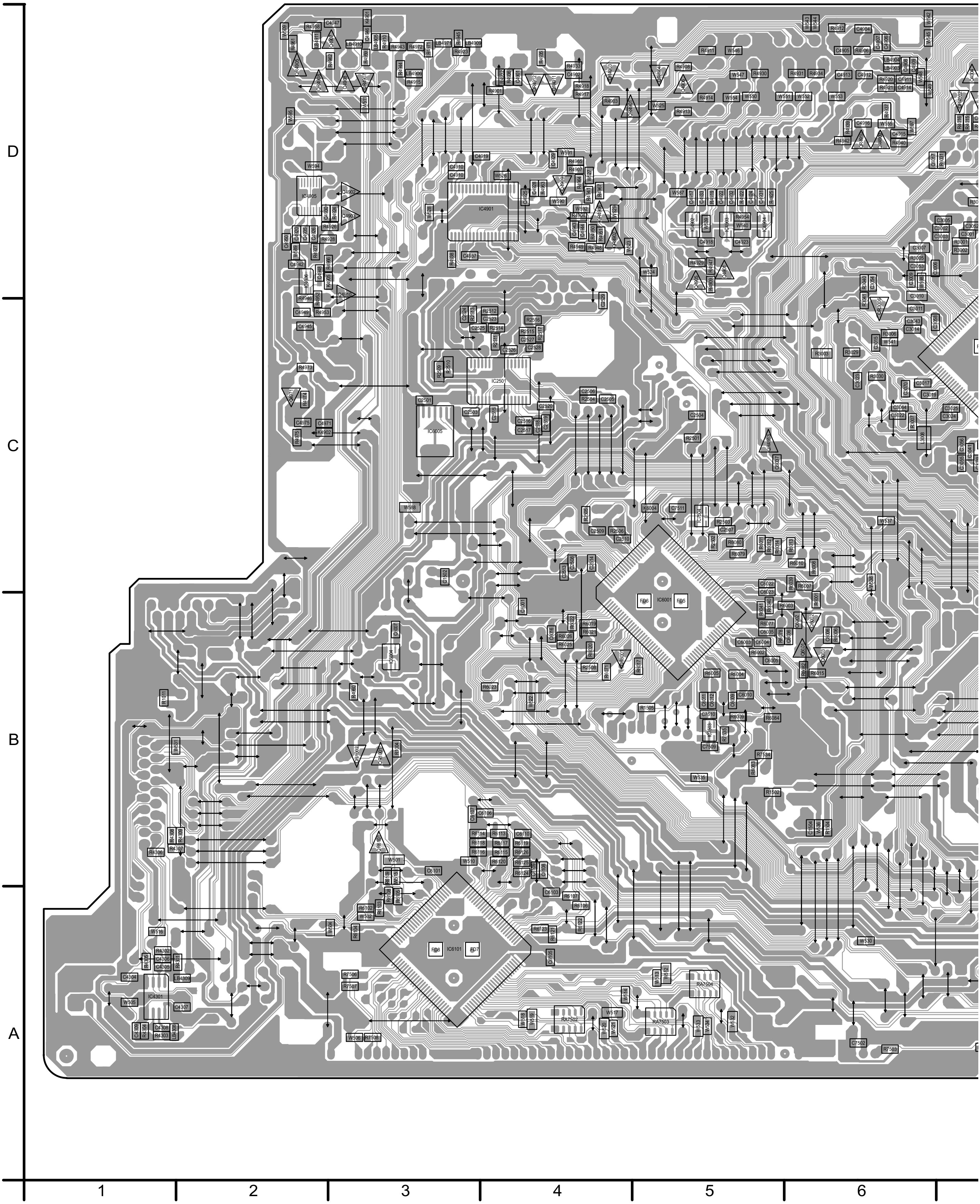
ADRESS INFORMATION

NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
SOLDER SIDE

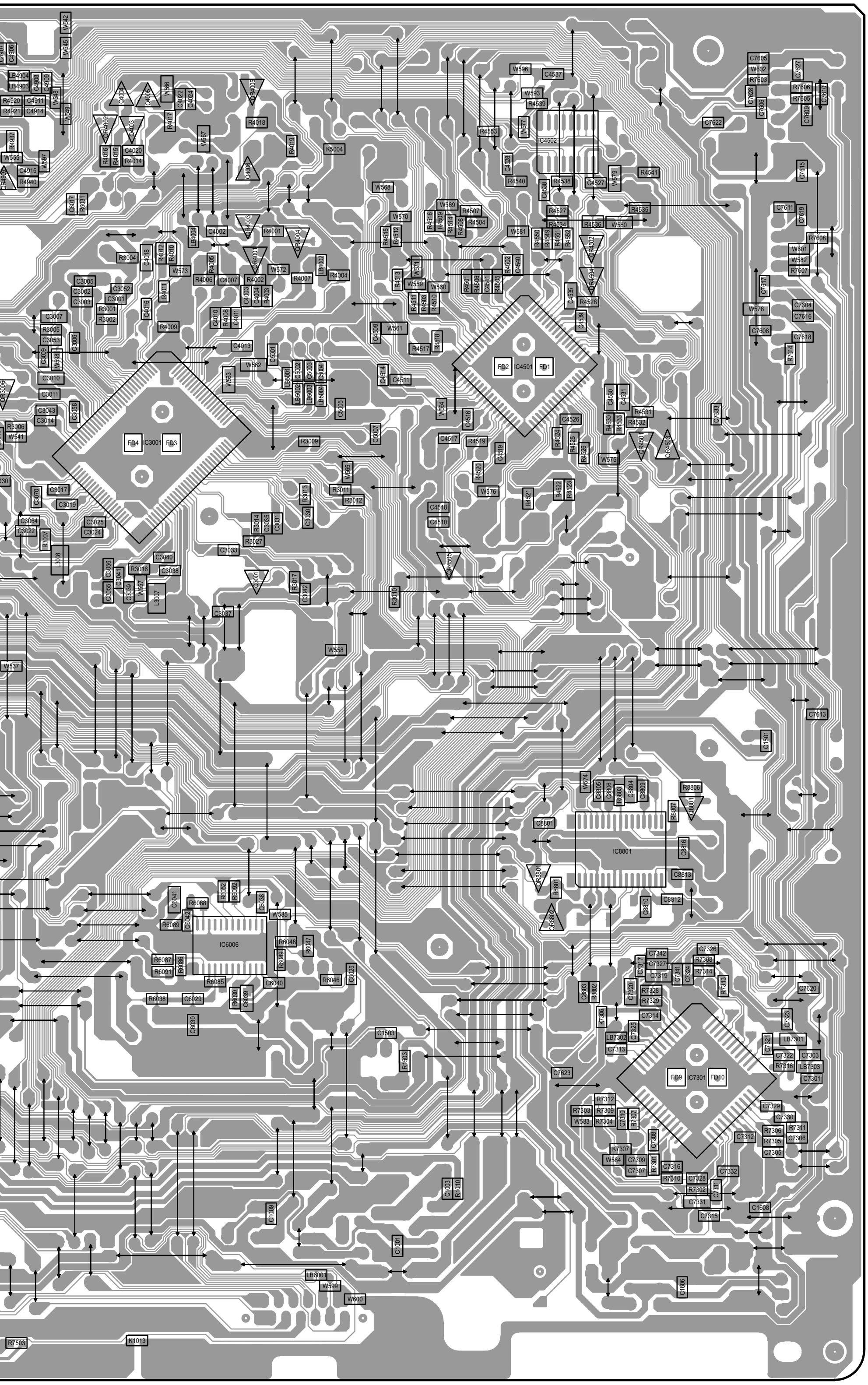
7 8 9 10 11 12

19.2. MAIN PCB (SOLDER SIDE)

(REPD0010A: NV-VP28EG / NV-VP33EG) (REPD0010B: NV-VP28EC / NV-VP33EC) (REPD0010C: NV-
(REPD0010F: NV-VP23EG) (REPD0010G: NV-VP23EC) (REPD0010J: NV-VP23EP)


D
C
B
A
1
2
3
4
5
6
IC4905
IC4901
IC2501
IC6005
IC6001
IC6101
IC4301
RA7502
RA7603
RA7604

0010C: NV-VP33EB) (REPD0010D: NV-VP33EBL) (REPD0010E: NV-VP33EP)



MAIN PCB			
IC 2501	C4	QR 1001	B3
IC 3001	C7	QR 1002	B3
IC 4301	A1	QR 3006	C6
IC 4501	C9	QR 4001	D7
IC 4901	D4	QR 4002	D7
IC 4902	D5	QR 4003	D7
IC 4903	D5	QR 4004	D8
IC 4904	D5	QR 4005	D7
IC 4905	D2	QR 4501	C9
IC 6001	B5	QR 4502	D9
IC 6004	B3	QR 4503	C10
IC 6005	C3	QR 4504	D9
IC 6006	B7	QR 4505	C8
IC 6101	A3	QR 4901	D4
IC 7301	B10	QR 4902	D4
IC 7503	B5	QR 4903	D4
IC 7504	C5	QR 4904	D5
IC 8801	B9	QR 4905	D2
Q 3001	C7	QR 4906	D4
Q 4003	D7	QR 4907	D3
Q 4004	D7	QR 4908	D2
Q 4005	D7	QR 4909	D6
Q 4006	D7	QR 4910	D6
Q 4901	C5	QR 4911	D4
Q 4902	D3	QR 4912	D4
Q 4903	D3	QR 4913	D4
Q 4905	C5	QR 6001	B4
Q 4906	D5	QR 6101	B3
Q 4907	D3	QR 8801	B9
Q 4908	D3	QR 8802	B9
Q 4909	D4	RA 7502	A4
Q 4910	C3	RA 7503	A5
Q 4971	C2	RA 7504	A5
Q 6001	B6		
Q 6002	B6		
Q 6003	B6		
Q 8801	B10		

ADRESS INFORMATION

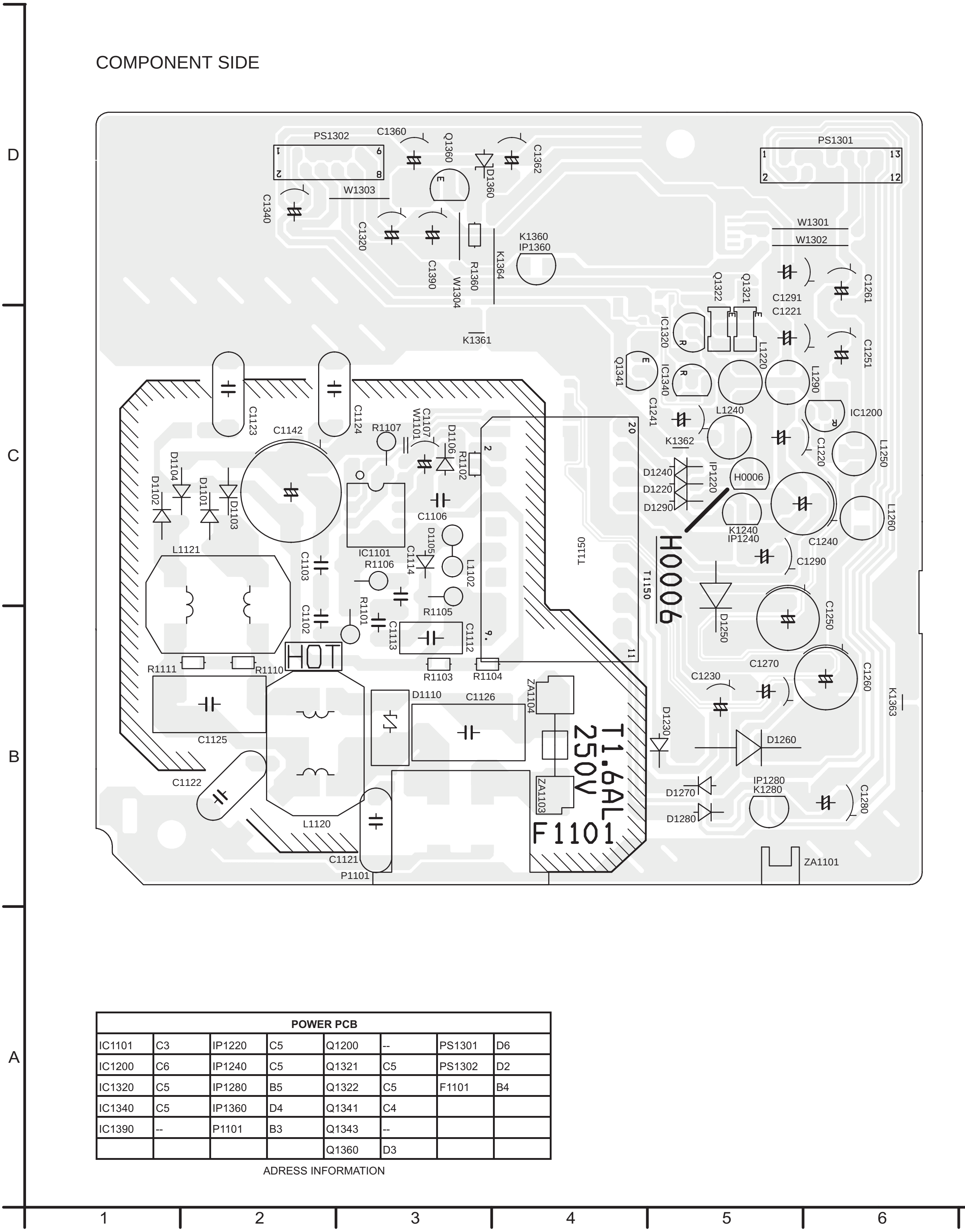
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB
SOLDER SIDE

7 8 9 10 11 12

19.7. POWER PCB

(REPD0012A)

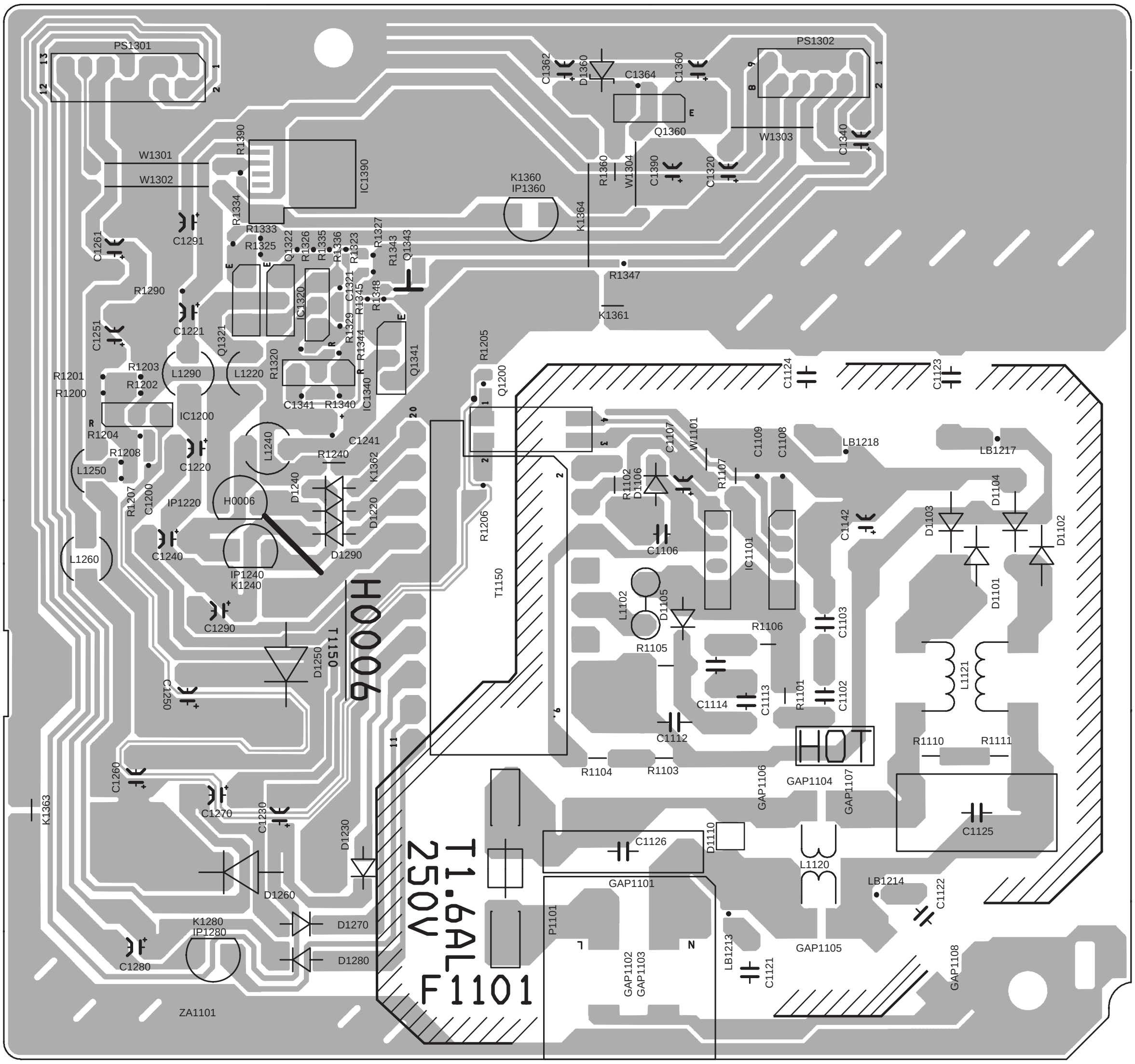
COMPONENT SIDE


D
C
B
A
1
2
3
4
5
6
PS1302
C1360
Q1360
D1360
C1362
PS1301
C1340
W1303
C1320
C1390
R1360
W1304
K1364
K1360
IP1360
W1301
W1302
Q1322
Q1321
C1291
C1221
C1261
IC1320
L1220
C1251
K1361
Q1341
IC1340
L1290
C1241
L1240
IC1200
C1123
C1124
C1142
R1107
C1107
W1101
D1106
R1102
T1150
K1362
C1220
L1250
D1104
D1101
D1102
D1103
D1240
D1220
D1290
IP1220
H0006
L1260
C1106
D1105
K1240
IP1240
C1240
L1121
IC1101
R1106
C1114
L1102
C1103
C1290
C1102
R1101
C1113
R1105
C1112
D1250
C1250
HOT
R1111
R1110
R1103
R1104
C1270
C1260
C1230
K1363
D1110
C1126
ZA1104
D1230
C1125
D1260
T1.6AL
250V
C1122
ZA1103
IP1280
K1280
D1270
C1280
D1280
L1120
F1101
C1121
P1101
ZA1101

POWER PCB							
IC1101	C3	IP1220	C5	Q1200	--	PS1301	D6
IC1200	C6	IP1240	C5	Q1321	C5	PS1302	D2
IC1320	C5	IP1280	B5	Q1322	C5	F1101	B4
IC1340	C5	IP1360	D4	Q1341	C4		
IC1390	--	P1101	B3	Q1343	--		
				Q1360	D3		

ADRESS INFORMATION

SOLDER SIDE


PS1301
13
12
1
2
W1301
W1302
R1390
IC1390
C1291
C1261
R1334
R1333
R1325
Q1322
R1326
R1335
R1336
R1323
R1327
R1343
Q1343
R1290
C1221
C1251
IC1320
R1321
R1345
R1348
R1329
R1344
Q1321
R1201
R1200
R1203
R1202
L1290
L1220
R1320
C1341
R1340
IC1340
Q1341
IC1200
R1204
R1208
L1250
C1220
R1207
C1200
IP1220
H0006
L1240
C1241
R1240
K1362
D1240
D1220
D1290
C1240
L1260
IP1240
K1240
C1290
H0006
T1150
D1250
C1250
C1260
K1363
C1270
C1230
D1230
D1260
K1280
IP1280
D1270
D1280
C1280
ZA1101
C1362
D1360
C1364
C1360
PS1302
9
8
1
2
Q1360
W1303
C1340
K1360
IP1360
R1360
W1304
C1390
C1320
K1364
R1347
K1361
R1205
Q1200
R1206
T1150
C1124
C1123
C1107
W1101
C1109
C1108
LB1218
LB1217
R1102
D1106
R1107
C1106
C1142
D1103
D1104
D1102
IC1101
L1102
D1105
R1106
C1103
D1101
R1105
L1121
C1114
C1113
R1101
C1102
C1112
HOT
R1110
R1111
R1104
R1103
GAP1106
GAP1104
GAP1107
C1125
D1110
C1126
GAP1101
L1120
LB1214
C1122
P1101
L
N
GAP1102
GAP1103
LB1213
C1121
GAP1105
GAP1108
T1.6AL
250V
F1101

POWER PCB									
IC1101	C10	IP1220	C8	Q1200	C9	PS1301	D7
IC1200	C8	IP1240	C8	Q1321	C8	PS1302	D11
IC1320	C8	IP1280	B8	Q1322	C8	F1101	B9
IC1340	C9	IP1360	D9	Q1341	C9		
IC1390	D9	P1101	B10	Q1343	D9		
				Q1360	D10		

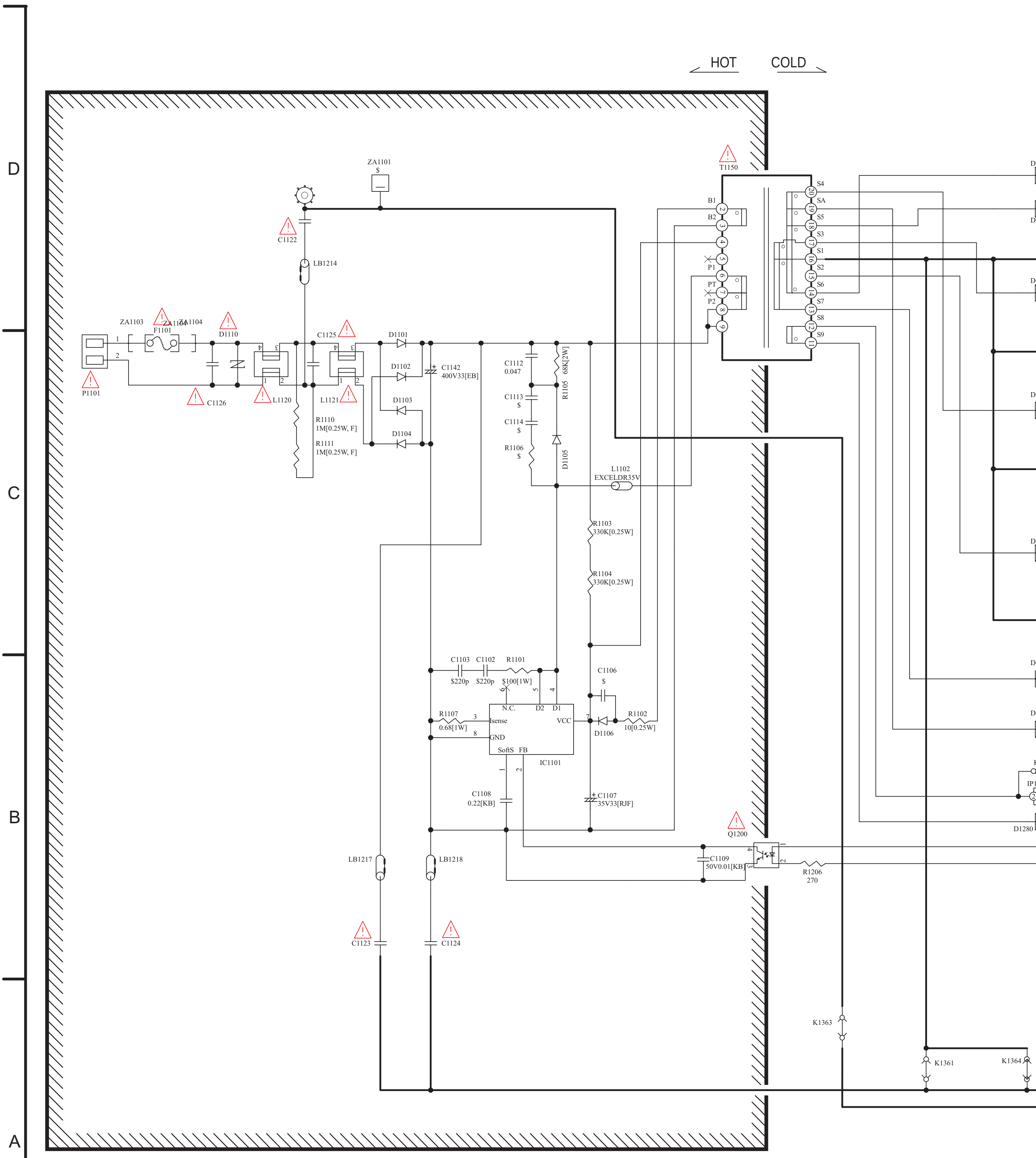
ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
COMPONENT SIDE / SOLDER SIDE

7 8 9 10 11 12

18 SCHEMATIC DIAGRAM

18.1. POWER PCB


HOT
COLD
D
C
B
A
ZA1101
$
T1150
C1122
LB1214
ZA1103
F1101
ZA1104
D1110
P1101
C1126
L1120
C1125
L1121
D1101
D1102
C1142
400V33[EB]
D1103
D1104
R1110
1M[0.25W, F]
R1111
1M[0.25W, F]
C1112
0.047
R1105 68K[2W]
C1113
$
C1114
$
R1106
$
D1105
L1102
EXCELDR35V
R1103
330K[0.25W]
R1104
330K[0.25W]
B1
B2
P1
PT
P2
S4
SA
S5
S3
S1
S2
S6
S7
S8
S9
C1103
$220p
C1102
$220p
R1101
$100[1W]
C1106
$
R1107
0.68[1W]
N.C.
D2
D1
Isense
VCC
GND
SoftS
FB
IC1101
D1106
R1102
10[0.25W]
C1108
0.22[KB]
C1107
35V33[RJF]
Q1200
C1109
50V0.01[KB]
R1206
270
LB1217
LB1218
C1123
C1124
K1363
K1361
K1364
D1280
1
2
3
4
5
6

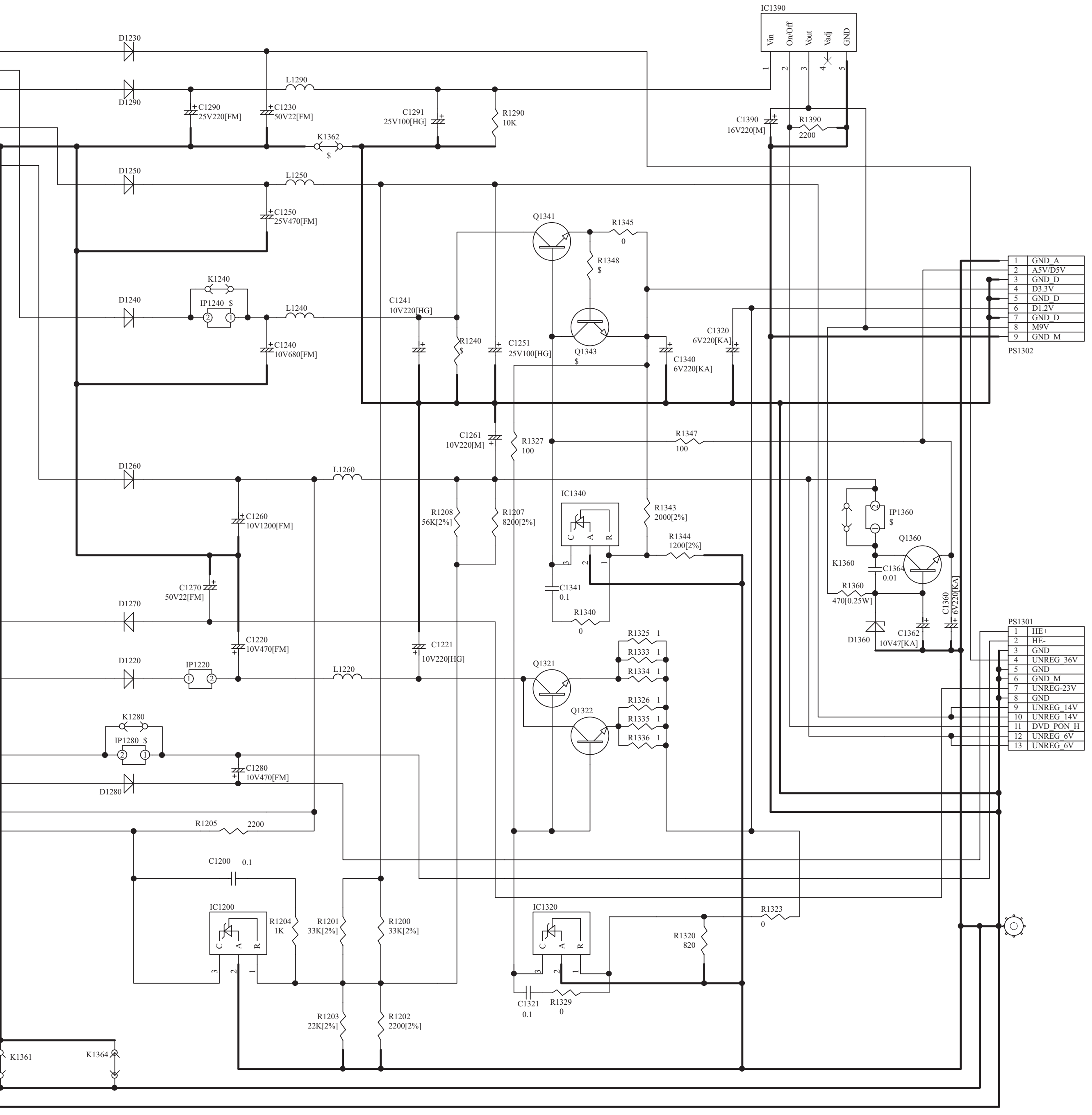
Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

CAUTION

THE STRIPED FRA
FROM THE SECON
PAY ATTENTION N
THE PRODUCTS.

NAVIGATION
INTERCONNECTION

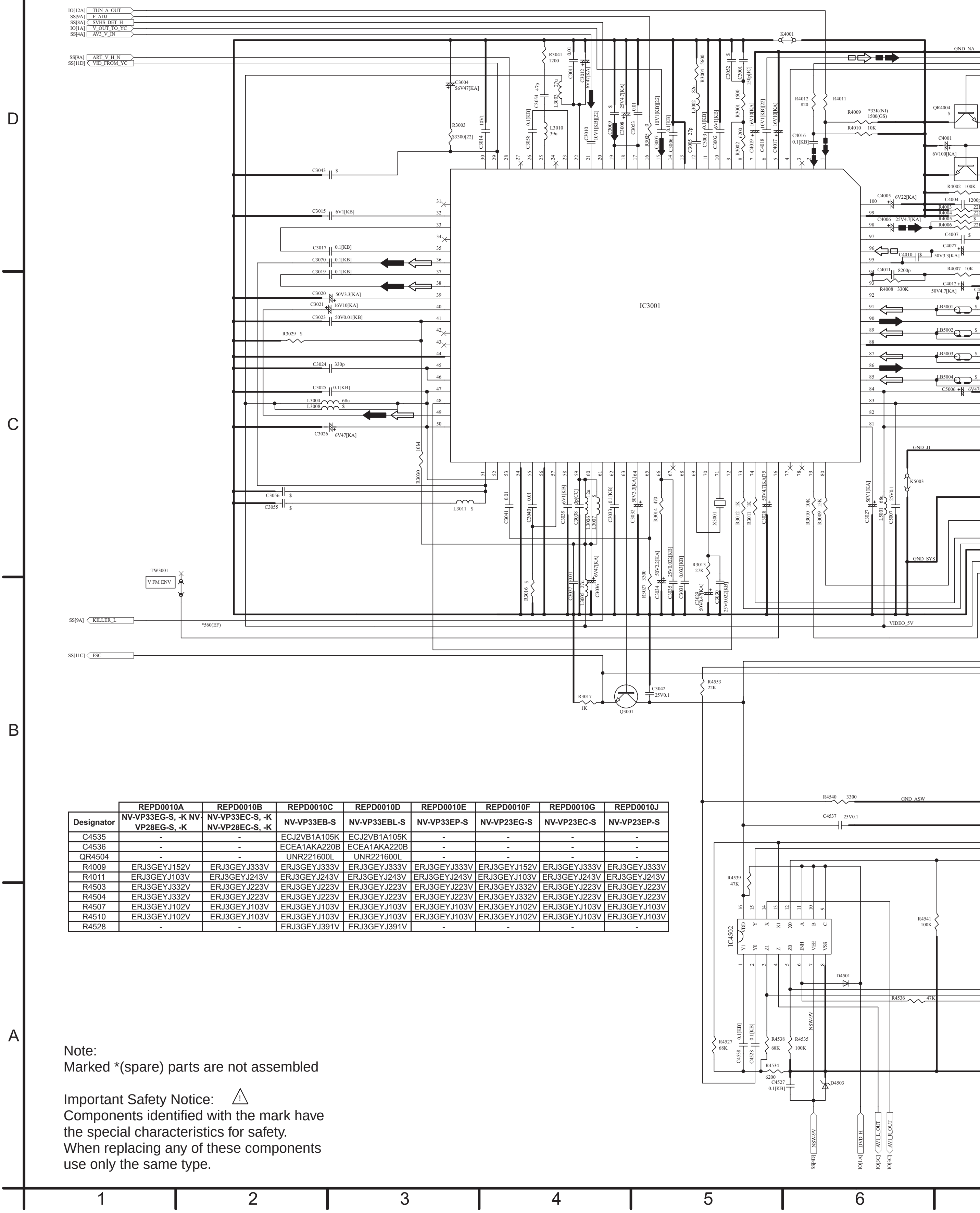

IC1390
Vin
On/Off
Vout
Vadj
GND
1
2
3
4
5
D1230
D1290
L1290
C1290
25V220[FM]
C1230
50V22[FM]
C1291
25V100[HG]
R1290
10K
C1390
16V220[M]
R1390
2200
K1362
$
D1250
L1250
C1250
25V470[FM]
Q1341
R1345
0
R1348
$
K1240
IP1240 $
D1240
L1240
C1240
10V680[FM]
C1241
10V220[HG]
R1240
$
C1251
25V100[HG]
Q1343
$
C1320
6V220[KA]
C1340
6V220[KA]
1
GND_A
2
A5V/D5V
3
GND_D
4
D3.3V
5
GND_D
6
D1.2V
7
GND_D
8
M9V
9
GND_M
PS1302
C1261
10V220[M]
R1327
100
R1347
100
D1260
L1260
C1260
10V1200[FM]
IC1340
R1208
56K[2%]
R1207
8200[2%]
R1343
2000[2%]
R1344
1200[2%]
IP1360
$
Q1360
K1360
C1364
0.01
R1360
470[0.25W]
D1360
C1362
10V47[KA]
C1360
6V220[KA]
C1270
50V22[FM]
D1270
C1341
0.1
R1340
0
PS1301
1
HE+
2
HE-
3
GND
4
UNREG_36V
5
GND
6
GND_M
7
UNREG-23V
8
GND
9
UNREG_14V
10
UNREG_14V
11
DVD_PON_H
12
UNREG_6V
13
UNREG_6V
C1220
10V470[FM]
C1221
10V220[HG]
D1220
IP1220
L1220
Q1321
R1325 1
R1333 1
R1334 1
R1326 1
R1335 1
R1336 1
Q1322
K1280
IP1280 $
C1280
10V470[FM]
D1280
R1205
2200
C1200
0.1
IC1200
R1204
1K
R1201
33K[2%]
R1200
33K[2%]
IC1320
R1323
0
R1320
820
C
A
R
C1321
0.1
R1329
0
R1203
22K[2%]
R1202
2200[2%]
K1361
K1364

STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY
M THE SECONDARY CIRCUIT.
ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF
PRODUCTS.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
SCHEMATIC DIAGRAM

18.2. MAIN PCB - AUDIO/VIDEO

- ◀■ AUDIO MAIN SIGNAL PATH IN REC MODE
- ◁□ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
- ◀ VIDEO MAIN SIGNAL PATH IN REC MODE
- ◁ VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



IO[12A] TUN_A_OUT
SS[9A] F_ADJ
SS[8A] SVHS_DET_H
IO[1A] V_OUT_TO_YC
SS[4A] AV3_V_IN
SS[9A] ART_V_H_N
SS[11D] VID_FROM_YC
K4001
GND_NA
IC3001
C3004 $6V47[KA]
R3003 $3300[22]
R3041 1200
L3003 27u
L3010 39u
L3002 82u
R3004 5600
R4012 820
R4011
R4009 *33K(NI) 1500(GS)
R4010 10K
QR4004 $
C4001 6V100[KA]
C4016 0.1[KB]
R4002 100K
C4005 6V22[KA]
C4006 25V4.7[KA]
C4007
C4027 50V3.3[KA]
C4010
C4011 8200p
R4007 10K
R4008 330K
C4012 50V4.7[KA]
LB5001
LB5002
LB5003
LB5004
C5006
C3043 $
C3015 6V1[KB]
C3017 0.1[KB]
C3070 0.1[KB]
C3019 0.1[KB]
C3020 50V3.3[KA]
C3021 16V10[KA]
C3023 50V0.01[KB]
R3029 $
C3024 330p
C3025 0.1[KB]
L3004 68u
L3008 $
C3026 6V47[KA]
R3030 10M
C3056 $
C3055 $
L3011 $
X3001
R3012 1K
R3011 1K
R3010 10K
R3009 15K
C3027 50V1[KA]
L3001
C3007 25V0.1
K5003
GND_J1
GND_SYS
VIDEO_5V
TW3001
V FM ENV
SS[9A] KILLER_L
*560(EF)
SS[11C] FSC
R3016 $
R3013 27K
R3027 3300
C3034 50V2.2[KA]
C3035 25V0.022[KB]
C3031 0.033[KB]
C3029 50V0.47[KA]
C3030 25V0.022[KB]
C3036 6V47[KA]
R3017 1K
Q3001
C3042 25V0.1
R4553 22K
R4540 3300
GND_ASW
C4537 25V0.1
R4539 47K
IC4502
D4501
R4536 47K
R4541 100K
R4527 68K
C4538 0.1[KB]
C4528 0.1[KB]
R4538 68K
R4535 100K
R4534 6200
C4527 0.1[KB]
D4503
NSW-9V
SS[4D] NSW-9V
IO[1A] DVD_H
IO[3C] AV1_L_OUT
IO[3C] AV1_R_OUT
D
C
B
A
1
2
3
4
5
6

	REPD0010A	REPD0010B	REPD0010C	REPD0010D	REPD0010E	REPD0010F	REPD0010G	REPD0010J
Designator	NV-VP33EG-S, -K NV-VP28EG-S, -K	NV-VP33EC-S, -K NV-VP28EC-S, -K	NV-VP33EB-S	NV-VP33EBL-S	NV-VP33EP-S	NV-VP23EG-S	NV-VP23EC-S	NV-VP23EP-S
C4535	-	-	ECJ2VB1A105K	ECJ2VB1A105K	-	-	-	-
C4536	-	-	ECEA1AKA220B	ECEA1AKA220B	-	-	-	-
QR4504	-	-	UNR221600L	UNR221600L	-	-	-	-
R4009	ERJ3GEYJ152V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ152V	ERJ3GEYJ333V	ERJ3GEYJ333V
R4011	ERJ3GEYJ103V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ103V	ERJ3GEYJ243V	ERJ3GEYJ243V
R4503	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V
R4504	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V
R4507	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V
R4510	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V
R4528	-	-	ERJ3GEYJ391V	ERJ3GEYJ391V	-	-	-	-

Note:
Marked *(spare) parts are not assembled

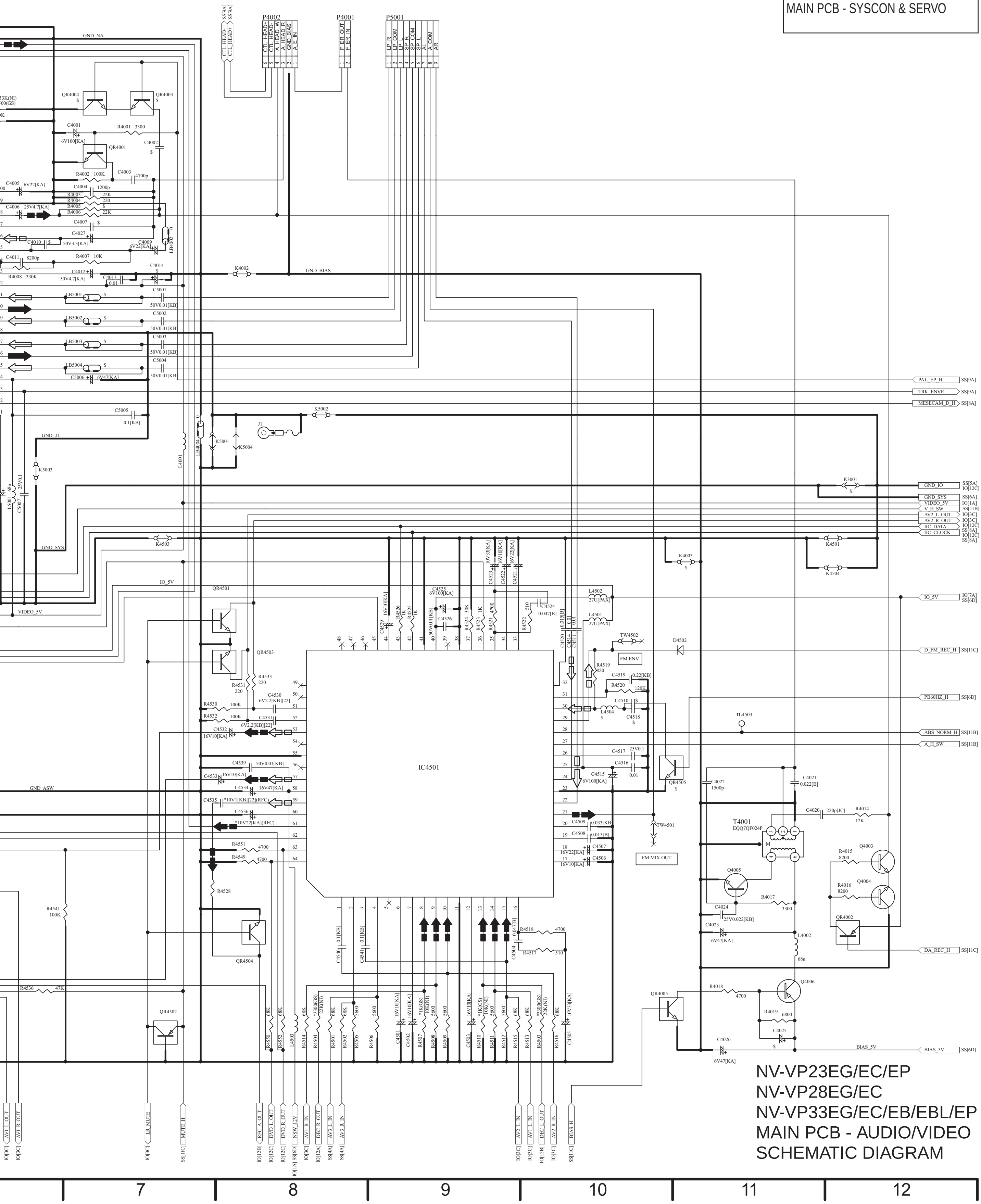
Important Safety Notice: ⚠
Components identified with the mark have
the special characteristics for safety.
When replacing any of these components
use only the same type.

NAVIGATION

INTERCONNECTION

MAIN PCB - I/O

MAIN PCB - SYSCON & SERVO

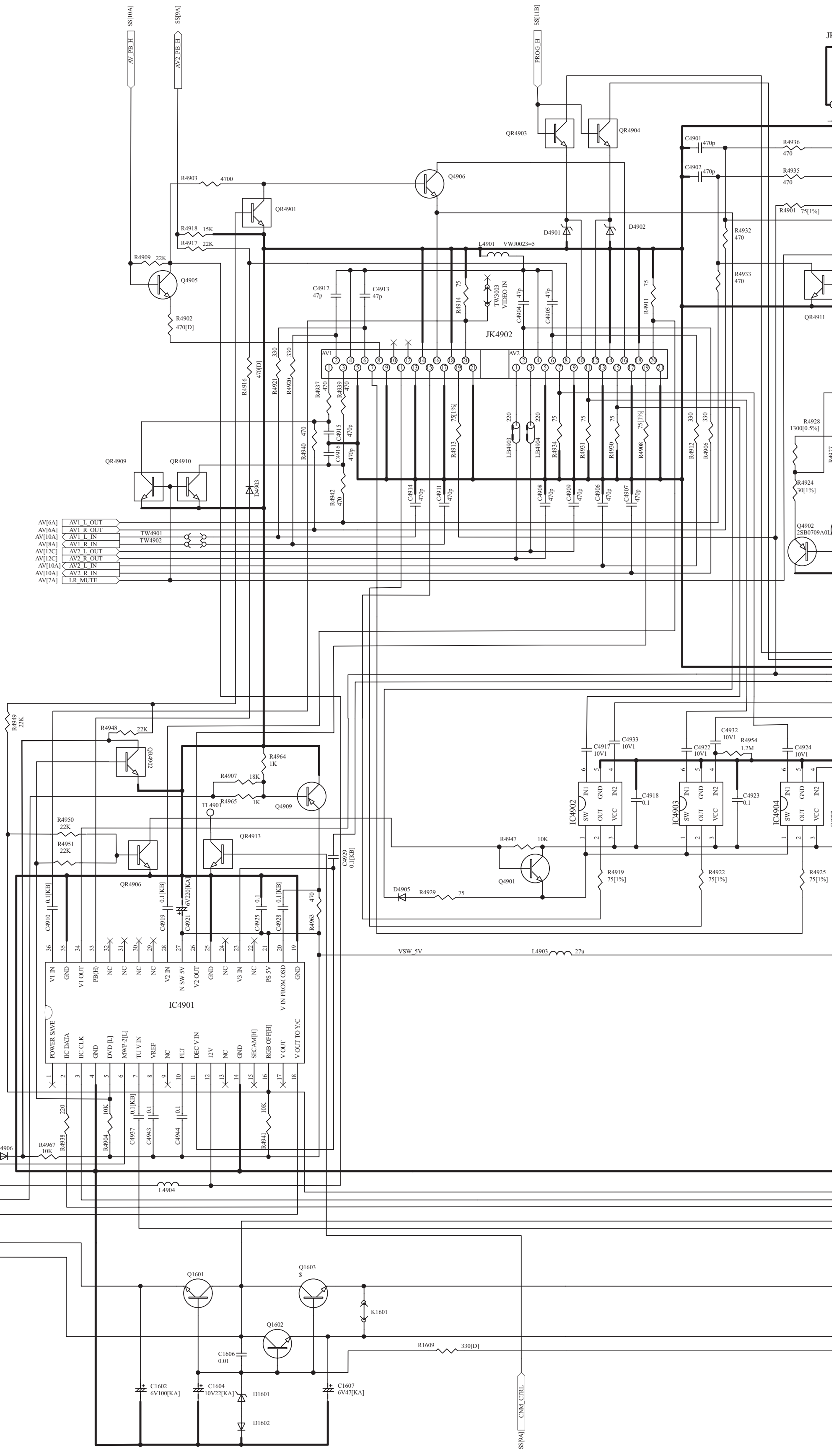

P4002
P4001
P5001
CTL_HEAD-
CTL_HEAD+
SS[9A]
A_HEAD_W
A_HEAD_R
GND_BIAS
A_E_IN
F_ER_OUT
F_ER_IN
LP_R
LP_COM
LP_L
SP_R
SP_COM
SP_L
AL
A_COM
AR
GND_NA
QR4004
QR4003
QR4001
R4001 3300
C4001 6V100[KA]
C4002
R4002 100K
C4003 4700p
C4004 1200p
R4003 22K
R4004 220
R4005
R4006 22K
C4005 6V22[KA]
C4006 25V4.7[KA]
C4007
C4027 50V3.3[KA]
C4009 6V22[KA]
C4010
LB4002
C4011 8200p
R4007 10K
R4008 330K
C4012 50V4.7[KA]
C4013 0.01
C4014
K4002
LB5001
LB5002
LB5003
LB5004
C5001 50V0.01[KB]
C5002 50V0.01[KB]
C5003 50V0.01[KB]
C5004 50V0.01[KB]
C5006 6V47[KA]
C5005 0.1[KB]
K5002
J1
K5001
K5004
K5003
L4001
LB4004
GND_J1
L5001
C5007 25V0.1
PAL_EP_H SS[9A]
TRK_ENVE SS[9A]
MESECAM_D_H SS[8A]
K3001
GND_IO SS[5A] IO[12C]
GND_SYS SS[6A]
VIDEO_5V IO[1A]
V_H_SW SS[11B]
AV2_L_OUT IO[3C]
AV2_R_OUT IO[3C]
IIC_DATA IO[12C] SS[8A]
IIC_CLOCK IO[12C] SS[8A]
K4501
K4504
K4003
K4503
GND_SYS
IO_5V
VIDEO_5V
IO_5V IO[7A] SS[6D]
QR4501
QR4503
R4533 220
R4531 220
IC4501
L4502 27U[PAX]
L4501 27U[PAX]
C4524 0.047[B]
TW4502
FM ENV
D4502
D_FM_REC_H SS[11C]
R4519 820
C4519 0.22[KB]
R4520 120K
C4510
L4504
C4518
PB60HZ_H SS[6D]
TL4503
ABS_NORM_H SS[11B]
A_H_SW SS[11B]
C4517 25V0.1
C4516 0.01
C4515 6V100[KA]
QR4505
C4022 1500p
C4021 0.022[B]
C4020 220p[JC]
R4014 12K
T4001 EQQ7QF024P
Q4003
Q4004
Q4005
R4015 8200
R4016 8200
R4017 3300
C4024 25V0.022[KB]
C4023 6V47[KA]
L4002 68u
QR4002
DA_REC_H SS[11C]
Q4006
R4018 4700
R4019 6800
C4025
C4026 6V47[KA]
QR4005
BIAS_5V
BIAS_5V SS[6D]
TW4501
FM MIX OUT
C4509 0.033[KB]
C4508 0.015[B]
C4507 16V22[KA]
C4506 16V10[KA]
R4530 100K
R4532 100K
C4530 6V2.2[KB][22]
C4531 6V2.2[KB][22]
C4532 16V10[KA]
C4539 50V0.01[KB]
C4533 16V10[KA]
C4534 16V47[KA]
C4535 *10V1[KB][22](RFC)
C4536 *10V22[KA](RFC)
R4551 4700
R4549 4700
R4528
R4541 100K
QR4504
GND_ASW
R4536 47K
QR4502
C4540 0.1[KB]
C4541 0.1[KB]
R4518 4700
R4517 510
C4504 0.047[B]
AV1_L_OUT IO[3C]
AV1_R_OUT IO[3C]
LR_MUTE IO[3C]
MUTE_H SS[11C]
RFC_A_OUT IO[12B]
DVD_L_OUT IO[12C]
DVD_R_OUT IO[12C]
NSW_12V IO[1A] SS[6D]
AV1_R_IN IO[3C]
DEC_R_OUT IO[12A]
AV3_L_IN SS[4A]
AV3_R_IN SS[4A]
AV2_L_IN IO[3C]
AV1_L_IN IO[3C]
DEC_L_OUT IO[12B]
AV2_R_IN IO[3C]
BIAS_H SS[11C]
7
8
9
10
11
12

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - AUDIO/VIDEO
SCHEMATIC DIAGRAM

18.3. MAIN PCB - I/O SECTION

	REPD0010E	REPD0010F	REPD0010G	REPD0010J
Designator	NV-VP33EP-S	NV-VP23EG-S	NV-VP23EC-S	NV-VP23EP-S
C7301	ECJ1VF1H103Z	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7303	ECJ1VF1H103Z	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7305	ECJ1VC1H330J	-	ECJ1VC1H330J	ECJ1VC1H330J
C7306	ECJ1VC1H330J	-	ECJ1VC1H330J	ECJ1VC1H330J
C7307	-	ECJ1VB1H332K	-	-
C7308	ERJ3GEYJ822V	ECJ1VC1H681J	ERJ3GEYJ822V	ERJ3GEYJ822V
C7309	-	ECJ1VB1H332K	-	-
C7310	-	ECJ1VC1H681J	-	-
C7313	-	ECJ1VF1C474Z	-	-
C7314	ECJ1VB1C104K	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K
C7315	-	ECJ1VC1H090D	-	-
C7316	ECJ1VF1E104Z	-	ECJ1VF1E104Z	ECJ1VF1E104Z
C7317	-	ECJ1VB1H152K	-	-
C7321	-	ECJ1VB1H472K	-	-
C7322	-	ECJ1VF1C474Z	-	-
C7323	ECJ1VF1E104Z	-	ECJ1VF1E104Z	ECJ1VF1E104Z
C7324	-	ECJ1VB1H152K	-	-
C7325	ECJ1VB1C104K	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K
C7327	-	ECJ1VB1H152K	-	-
C7328	ECJ1VF1E104Z	ECJ1VF1C474Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7329	-	ECJ1VF1C474Z	-	-
C7330	-	ECJ1VB1C104K	-	-
C7331	ECJ2VB1A105K	ECJ2VF1C474Z	ECJ2VB1A105K	ECJ2VB1A105K
C7341	ECJ1VB1H472K	-	ECJ1VB1H472K	ECJ1VB1H472K
C7342	ECJ1VB1H472K	-	ECJ1VB1H472K	ECJ1VB1H472K
C7343	ECEA0JKA221B	-	ECEA0JKA221B	ECEA0JKA221B
D7301	MA2C165001VT	-	MA2C165001VT	MA2C165001VT
IC7301	C1AB00001404	C0ZBZ0000580	C1AB00001404	C1AB00001404
K7306	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
K7307	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
L7607	G0C2R2JA0019	G0C470JA0019	G0C2R2JA0019	G0C2R2JA0019
LB7301	ERJ6GEY0R00V	-	ERJ6GEY0R00V	ERJ6GEY0R00V
LB7302	J0JBC0000011	-	J0JBC0000011	J0JBC0000011
LB7303	ERJ6GEY0R00V	-	ERJ6GEY0R00V	ERJ6GEY0R00V
R7301	-	ERJ3GEYJ912V	-	-
R7302	ERJ3GEY0R00V	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7303	-	ERJ3GEY0R00V	-	-
R7304	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
R7307	-	ERJ3GEYJ562V	-	-
R7309	-	ERJ3GEYJ273V	-	-
R7310	ERJ3GEY0R00V	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7311	-	ERJ3GEYJ752V	-	-
R7312	ERJ3GEY0R00V	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7316	ERJ3GEYJ103V	-	ERJ3GEYJ103V	ERJ3GEYJ103V
R7328	ERJ3GEYJ221V	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7329	ERJ3GEYJ221V	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V
TU7601	ENGF7502GF	ENGF7501GF	ENGF7501GF	ENGF7502GF
X7301	H0D245500011	H0H400400006	H0D245500011	H0D245500011

	REPD0010A	REPD0010B	REPD0010C	REPD0010D
Designator	NV-VP33EG-S, -K NV-VP28EG-S, -K	NV-VP33EC-S, -K NV-VP28EC-S, -K	NV-VP33EB-S	NV-VP33EBL-S
C7301	-	ECJ1VF1H103Z	ECJ1VF1H103Z	ECJ1VF1H103Z
C7303	-	ECJ1VF1H103Z	ECJ1VF1H103Z	ECJ1VF1H103Z
C7305	-	ECJ1VC1H330J	ECJ1VC1H330J	ECJ1VC1H330J
C7306	-	ECJ1VC1H330J	ECJ1VC1H330J	ECJ1VC1H330J
C7307	ECJ1VB1H332K	-	-	-
C7308	ECJ1VC1H681J	ERJ3GEYJ822V	ERJ3GEYJ822V	ERJ3GEYJ822V
C7309	ECJ1VB1H332K	-	-	-
C7310	ECJ1VC1H681J	-	-	-
C7313	ECJ1VF1C474Z	-	-	-
C7314	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K	ECJ1VB1C104K
C7315	ECJ1VC1H090D	-	-	-
C7316	-	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7317	ECJ1VB1H152K	-	-	-
C7321	ECJ1VB1H472K	-	-	-
C7322	ECJ1VF1C474Z	-	-	-
C7323	-	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7324	ECJ1VB1H152K	-	-	-
C7325	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K	ECJ1VB1C104K
C7327	ECJ1VB1H152K	-	-	-
C7328	ECJ1VF1C474Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7329	ECJ1VF1C474Z	-	-	-
C7330	ECJ1VB1C104K	-	-	-
C7331	ECJ2VF1C474Z	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K
C7341	-	ECJ1VB1H472K	ECJ1VB1H472K	ECJ1VB1H472K
C7342	-	ECJ1VB1H472K	ECJ1VB1H472K	ECJ1VB1H472K
C7343	-	ECEA0JKA221B	ECEA0JKA221B	ECEA0JKA221B
C7604	-	-	ECEA0JKA101B	ECEA0JKA101B
C7606	-	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7627	-	-	ECJ1VB1H471K	ECJ1VB1H471K
C7628	-	-	ECJ1VB1H102K	ECJ1VB1H102K
D7301	-	MA2C165001VT	MA2C165001VT	MA2C165001VT
IC7301	C0ZBZ0000580	C1AB00001404	C1AB00001404	C1AB00001404
K7306	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K7307	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
L7602	-	-	G0C270JA0019	G0C270JA0019
L7603	-	-	G0C270JA0019	G0C270JA0019
L7607	G0C470JA0019	G0C2R2JA0019	G0C2R2JA0019	G0C2R2JA0019
L7609	-	-	VWJ0023=5	VWJ0023=5
LB7301	-	ERJ6GEY0R00V	ERJ6GEY0R00V	ERJ6GEY0R00V
LB7302	-	J0JBC0000011	J0JBC0000011	J0JBC0000011
LB7303	-	ERJ6GEY0R00V	ERJ6GEY0R00V	ERJ6GEY0R00V
R7301	ERJ3GEYJ912V	-	-	-
R7302	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7303	ERJ3GEY0R00V	-	-	-
R7304	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7307	ERJ3GEYJ562V	-	-	-
R7309	ERJ3GEYJ273V	-	-	-
R7310	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7311	ERJ3GEYJ752V	-	-	-
R7312	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7316	-	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R7328	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7329	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7603	-	-	ERJ3GEY0R00V	ERJ3GEY0R00V
R7605	-	-	ERJ3GEYJ101Z	ERJ3GEYJ101Z
R7606	-	-	ERJ3GEY0R00V	ERJ3GEY0R00V
TU7601	ENGF7501GF	ENGF7501GF	ENG57D02G1F	ENG57D03G1F
X7301	H0H400400006	H0D245500011	H0D245500011	H0D245500011

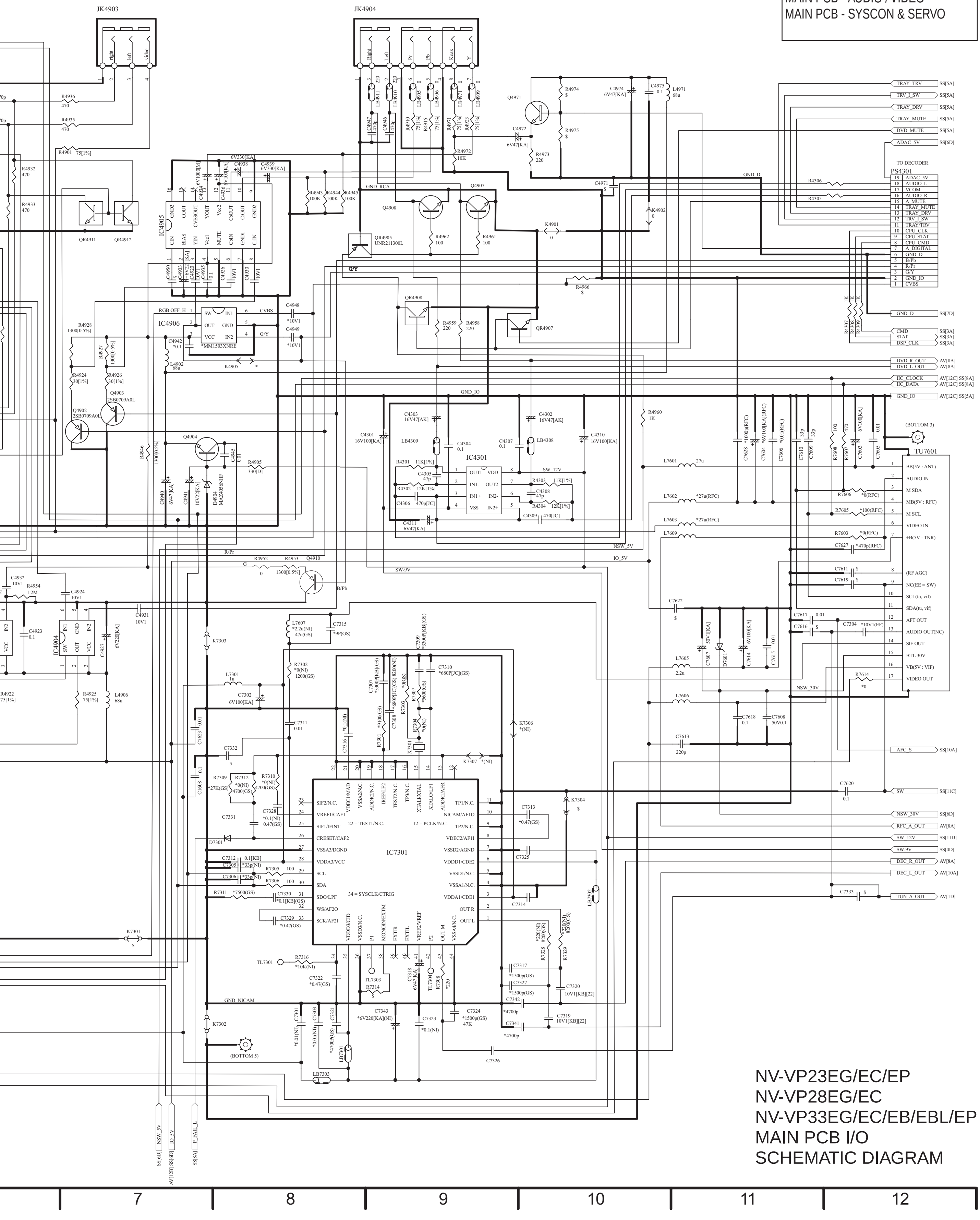


AV[6A] DVD_H
AV[8A] SS[6D] NSW_12V
SS[11C] V_OUT_TO_IO
AV[1D] V_OUT_TO_YC
AV[12C] VIDEO_5V
SS[6D] UNREG_6V
SS[10A] AV_PB_H
SS[9A] AV2_PB_H
SS[11B] PROG_H
QR4903
QR4904
Q4906
QR4901
Q4905
QR4909
QR4910
QR4902
Q4909
QR4906
QR4913
Q4901
Q4902 2SB0709A0L
QR4911
JK4902
AV1
AV2
IC4901
IC4902
IC4903
IC4904
L4901 VWJ0023=5
L4903 27u
L4904
TW4901
TW4902
TW3003 VIDEO IN
TL4901
D4901
D4902
D4903
D4905
D4906
AV[6A] AV1_L_OUT
AV[6A] AV1_R_OUT
AV[10A] AV1_L_IN
AV[8A] AV1_R_IN
AV[12C] AV2_L_OUT
AV[12C] AV2_R_OUT
AV[10A] AV2_L_IN
AV[10A] AV2_R_IN
AV[7A] LR_MUTE
V1 IN
GND
V1 OUT
PB(H)
NC
V2 IN
N SW 5V
V2 OUT
V3 IN
PS 5V
V IN FROM OSD
POWER SAVE
IIC DATA
IIC CLK
DVD [L]
MWP-2[L]
TU V IN
VREF
FLT
DEC V IN
12V
SECAM[H]
RGB OFF[H]
V OUT
V OUT TO Y/C
IN1
IN2
SW
OUT
VCC
VSW_5V
Q1601
Q1602
Q1603 S
K1601
C1602 6V100[KA]
C1604 10V22[KA]
C1606 0.01
C1607 6V47[KA]
D1601
D1602
R1609 330[D]
SS[9A] CNM_CTRL
R4903 4700
R4918 15K
R4917 22K
R4909 22K
R4902 470[D]
R4948 22K
R4949 22K
R4907 18K
R4964 1K
R4965 1K
R4950 22K
R4951 22K
R4947 10K
R4929 75
R4967 10K
R4919 75[1%]
R4922 75[1%]
R4925 75[1%]
R4954 1.2M
R4928 1300[0.5%]
R4924 30[1%]
R4936 470
R4935 470
R4901 75[1%]
R4932 470
R4933 470
C4901 470p
C4902 470p
C4912 47p
C4913 47p
C4917 10V1
C4933 10V1
C4922 10V1
C4932 10V1
C4924 10V1
C4918 0.1
C4923 0.1
C4929 0.1[KB]

Note:
Marked *(spare) parts are not assembled

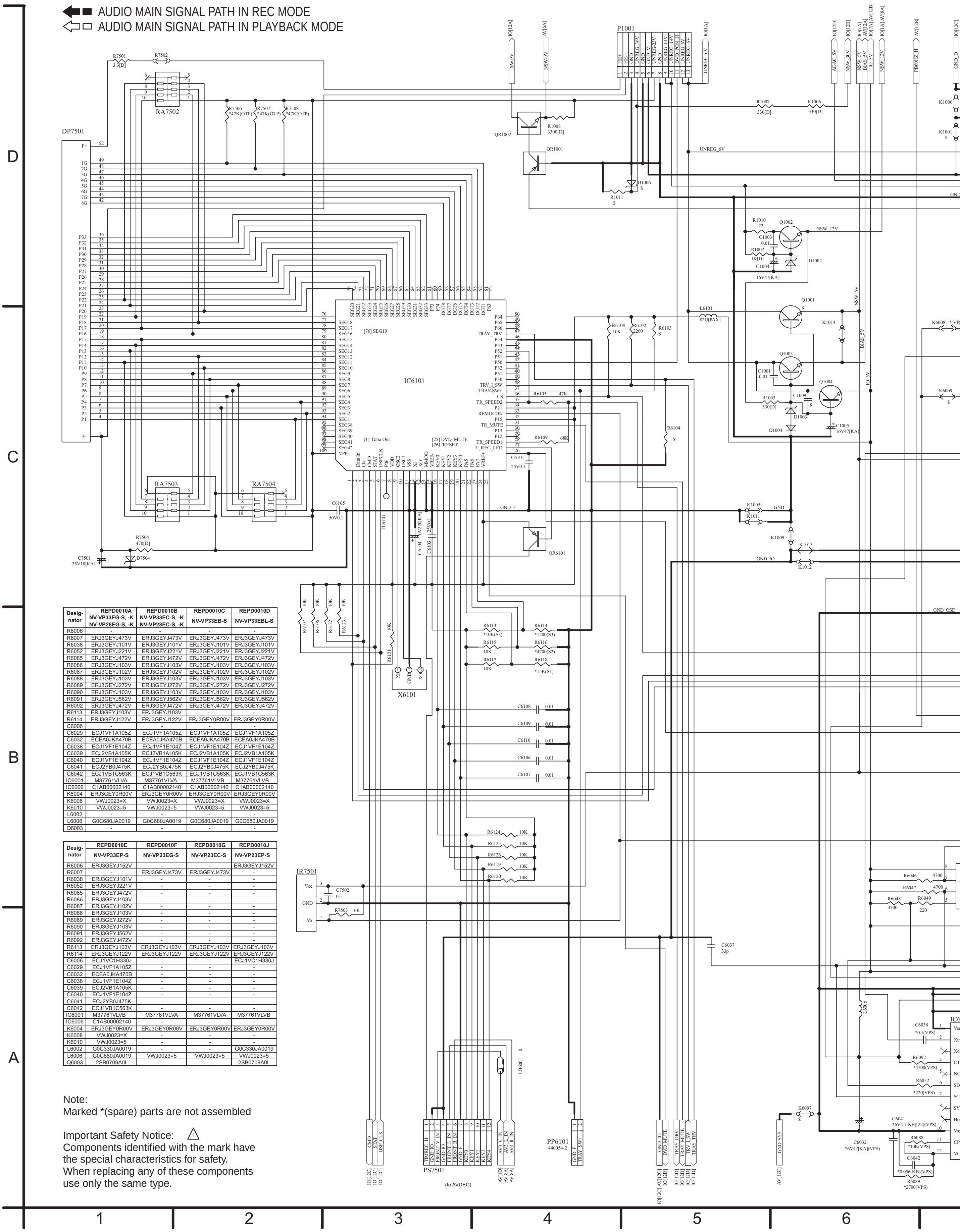
Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NAVIGATION
INTERCONNECTION
MAIN PCB - AUDIO / VIDEO
MAIN PCB - SYSCON & SERVO


JK4903
right
left
video
JK4904
Right
Left
Pr
Pb
Koax
Y
R4936 470
R4935 470
R4901 75[1%]
R4932 470
R4933 470
QR4911
QR4912
IC4905
6V330[KA]
C4938
C4939 6V330[KA]
GND2
COUT
CVBSOUT
YOUT
Vcc2
CbOUT
GND2
CIN
BIAS
YIN
Vcc1
MUTE
CbIN
GND1
CrIN
C4950
C4920
C4935
C4926
C4930
RGB OFF_H
IC4906
SW
IN1
OUT
GND
VCC
IN2
CVBS
G/Y
*MM1503XNRE
C4948 *10V1
C4949 *10V1
C4942 *0.1
L4902 68u
K4905
R4928 1300[0.5%]
R4927 1300[0.5%]
R4924 30[1%]
R4926 30[1%]
Q4903 2SB0709A0L
Q4902 2SB0709A0L
Q4904
C4945 0.01
R4905 330[D]
R4946 1300[0.5%]
C4940 6V47[KA]
C4941 10V22[KA]
D4904 MAZ4056NHF
R4943 100K
R4944 100K
R4945 100K
GND_RCA
Q4908
Q4907
R4962 100
R4961 100
QR4905 UNR211300L
G/Y
LB4911
LB4910
LB4905
LB4906
LB4971
LB4909
C4947 470p
C4946 470p
R4910 75[1%]
R4915 75[1%]
R4971 75[1%]
R4923 75[1%]
Q4971
R4974 $
R4975 $
C4974 6V47[KA]
C4975 0.1
L4971 68u
C4972 6V47[KA]
R4972 10K
R4973 220
C4971 $
GND_D
K4902 0
K4901 0
R4966 $
QR4908
R4959 220
R4958 220
QR4907
GND_IO
C4303 16V47[AK]
C4302 16V47[AK]
C4301 16V100[KA]
LB4309
C4304 0.1
C4307 0.1
LB4308
C4310 16V100[KA]
IC4301
R4301 11K[1%]
C4305 47p
R4302 12K[1%]
C4306 470p[JC]
OUT1
IN1-
IN1+
VSS
VDD
OUT2
IN2-
IN2+
SW_12V
R4303 11K[1%]
C4308 47p
R4304 12K[1%]
C4309 470[JC]
C4311 6V47[KA]
R4960 1K
R4306
R4305
TO DECODER
PS4301
19 ADAC_5V
18 AUDIO_L
17 VCOM
16 AUDIO_R
15 A_MUTE
14 TRAY_MUTE
13 TRAY_DRV
12 TRV_I_SW
11 TRAY/TRV
10 CPU_CLK
9 CPU_STAT
8 CPU_CMD
7 A_DIGITAL
6 GND_D
5 B/Pb
4 R/Pr
3 G/Y
2 GND_IO
1 CVBS
TRAY_TRV SS[5A]
TRV_I_SW SS[5A]
TRAY_DRV SS[5A]
TRAY_MUTE SS[5A]
DVD_MUTE SS[5A]
ADAC_5V SS[6D]
GND_D SS[7D]
R4307 1K
R4308 1K
R4309 1K
CMD SS[3A]
STAT SS[3A]
DSP_CLK SS[3A]
DVD_R_OUT AV[8A]
DVD_L_OUT AV[8A]
IIC_CLOCK AV[12C] SS[8A]
IIC_DATA AV[12C] SS[8A]
GND_IO AV[12C] SS[5A]
C7628 *1000p(RFC)
C7604 *6V100[KA](RFC)
C7606 *0.01(RFC)
C7610 33p
C7609 33p
R7608 100
R7607 470
C7603 6V100[KA]
C7605 0.01
(BOTTOM 3)
TU7601
BB(5V : ANT)
AUDIO IN
M SDA
MB(5V : RFC)
M SCL
VIDEO IN
+B(5V : TNR)
(RF AGC)
NC(EE = SW)
SCL(tu, vif)
SDA(tu, vif)
AFT OUT
AUDIO OUT(NC)
SIF OUT
BTL 30V
VB(5V : VIF)
VIDEO OUT
L7601 27u
L7602 *27u(RFC)
L7603 *27u(RFC)
L7609
R7606 *0(RFC)
R7605 *100(RFC)
R7603 *0(RFC)
C7627 *470p(RFC)
C7611 $
C7619 $
NSW_5V
IO_5V
SW-9V
R/Pr
G
R4952 0
R4953 1300[0.5%]
Q4910
B/Pb
C7622 $
C7617 0.01
C7616 $
C7304 *10V1(EF)
C7607 50V1[KA]
D7601
C7614 6V100[KA]
C7615 0.01
L7605 2.2u
R7614 *0
NSW_30V
L7606
C7618 0.1
C7608 50V0.1
C7613 220p
AFC_S SS[10A]
C7620 0.1
SW SS[11C]
NSW_30V SS[6D]
RFC_A_OUT AV[8A]
SW_12V SS[11D]
SW-9V SS[4D]
DEC_R_OUT AV[8A]
DEC_L_OUT AV[10A]
C7333 $
TUN_A_OUT AV[1D]
C4932 10V1
R4954 1.2M
C4924 10V1
C4931 10V1
C4923 0.1
IC4904
C4927 6V220[KA]
R4922 75[1%]
R4925 75[1%]
L4906 68u
L7607 *2.2u(NI) 47u(GS)
C7315 *9P(GS)
K7303
R7302 *0(NI) 1200(GS)
L7301 1u
C7302 6V100[KA]
C7623 0.01
C7311 0.01
C7332 $
C1608 0.1
R7309 *27K(GS)
R7312 *0(NI) 4700(GS)
R7310 *0(NI) 4700(GS)
C7331
C7328 *0.1(NI) 0.47(GS)
D7301
C7312 0.1[KB]
C7305 *33p(NI)
C7306 *33p(NI)
R7305 100
R7306 100
R7311 *7500(GS)
C7330 *0.1[KB](GS)
C7329 33 *0.47(GS)
K7301 $
IC7301
SIF2/N.C.
VREF1/CAF1
SIF1/IFINT
CRESET/CAF2
VSSA3/DGND
VDDA3/VCC
SCL
SDA
SDO/LPF
WS/AF2O
SCK/AF2I
22 = TEST1/N.C.
12 = PCLK/N.C.
34 = SYSCLK/CTRIG
TP1/N.C.
NICAM/AF1O
TP2/N.C.
VDEC2/AF1I
VSSD2/AGND
VDDD1/CDE2
VSSD1/N.C.
VSSA1/N.C.
VDDA1/CDEI
OUT R
OUT L
C7313 *0.47(GS)
K7304 $
C7325
C7314
LB7302
K7306 *(NI)
K7307 *(NI)
C7307 *3300P[KB](GS)
C7308 *680P[JC](GS)
R7303 *0(GS)
R7307 *5600(GS)
R7301 *9100(GS)
R7304 *0(NI)
X7301
C7309 *3300P[KB](GS)
C7310 *680P[JC](GS)
C7316 *0.1(NI)
TL7301
R7316 *10K(NI)
C7322 *0.47(GS)
TL7303
R7314 $
C7318 6V47[KA]
TL7304
R7308 *220
R7328 *220(NI) 8200(GS)
R7329 *220(NI) 8200(GS)
C7317 *1500p(GS)
C7327 *1500p(GS)
C7320 10V1[KB][22]
C7342 *4700p
C7341 *4700p
C7319 10V1[KB][22]
C7324 *1500p(GS) 47K
C7343 *6V220[KA](NI)
C7323 *0.1(NI)
C7326
GND_NICAM
K7302
(BOTTOM 5)
C7301 *0.01(NI)
C7303 *0.01(NI)
C7321 *4700P(GS)
LB7301
LB7303
NSW_5V SS[6D]
IO_5V AV[12B] SS[6D]
P_FAIL_L SS[8A]
7
8
9
10
11
12

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB I/O
SCHEMATIC DIAGRAM

18.4. MAIN PCB - SYSCON & SERVO


AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DP7501
RA7502
RA7503
RA7504
R7501 3.3[D]
R7502
R7504 470[D]
R7506 *47K(OTP)
R7507 *47K(OTP)
R7508 *47K(OTP)
C7501 35V10[KA]
D7504
IC6101
X6101
C6105 50V0.1
C6101 25V0.1
TL6101
QR1001
QR1002
QR6101
P1001
R1007 330[D]
R1006 330[D]
R1008 3300[D]
R1011
D1006
Q1001
Q1002
Q1003
Q1004
D1002
D1003
D1004
L6101 82U[PAX]
K1005
K1009
K1011
K1012
K1013
K1014
R6113 *10K(S3)
R6114 *1200(S3)
R6115 10K
R6116 *4700(S2)
R6117 10K
R6118 *15K(S1)
R6124 10K
R6125 10K
R6126 10K
R6119 10K
R6120 10K
C6108 0.01
C6109 0.01
C6110 0.01
C6106 0.01
C6107 0.01
IR7501
C7502 0.1
R7503 10K
C6037 33p
L6006
PS7501
PP6101 440054-2
LB6001
(to AVDEC)
GND_F
GND_IO
GND_OSD
UNREG_6V
NSW_12V
A
B
C
D
1
2
3
4
5
6

Desig-nator	REPD0010A NV-VP33EG-S, -K NV-VP28EG-S, -K	REPD0010B NV-VP33EC-S, -K NV-VP28EC-S, -K	REPD0010C NV-VP33EB-S	REPD0010D NV-VP33EBL-S
R6006	-	-	-	-
R6007	ERJ3GEYJ473V	ERJ3GEYJ473V	ERJ3GEYJ473V	ERJ3GEYJ473V
R6038	ERJ3GEYJ101V	ERJ3GEYJ101V	ERJ3GEYJ101V	ERJ3GEYJ101V
R6052	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R6085	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V
R6086	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6087	ERJ3GEYJ102V	ERJ3GEYJ102V	ERJ3GEYJ102V	ERJ3GEYJ102V
R6088	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6089	ERJ3GEYJ272V	ERJ3GEYJ272V	ERJ3GEYJ272V	ERJ3GEYJ272V
R6090	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6091	ERJ3GEYJ562V	ERJ3GEYJ562V	ERJ3GEYJ562V	ERJ3GEYJ562V
R6092	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V
R6113	ERJ3GEYJ103V	ERJ3GEYJ103V	-	-
R6114	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V
C6006	-	-	-	-
C6029	ECJ1VF1A105Z	ECJ1VF1A105Z	ECJ1VF1A105Z	ECJ1VF1A105Z
C6032	ECEA0JKA470B	ECEA0JKA470B	ECEA0JKA470B	ECEA0JKA470B
C6038	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C6039	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K
C6040	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C6041	ECJ2YB0J475K	ECJ2YB0J475K	ECJ2YB0J475K	ECJ2YB0J475K
C6042	ECJ1VB1C563K	ECJ1VB1C563K	ECJ1VB1C563K	ECJ1VB1C563K
IC6001	M37761VLVA	M37761VLVA	M37761VLVB	M37761VLVB
IC6006	C1AB00002140	C1AB00002140	C1AB00002140	C1AB00002140
K6004	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K6008	VWJ0023=X	VWJ0023=X	VWJ0023=X	VWJ0023=X
K6010	VWJ0023=5	VWJ0023=5	VWJ0023=5	VWJ0023=5
L6002	-	-	-	-
L6006	G0C680JA0019	G0C680JA0019	G0C680JA0019	G0C680JA0019
Q6003	-	-	-	-

Desig-nator	REPD0010E NV-VP33EP-S	REPD0010F NV-VP23EG-S	REPD0010G NV-VP23EC-S	REPD0010J NV-VP23EP-S
R6006	ERJ3GEYJ152V	-	-	ERJ3GEYJ152V
R6007	-	ERJ3GEYJ473V	ERJ3GEYJ473V	-
R6038	ERJ3GEYJ101V	-	-	-
R6052	ERJ3GEYJ221V	-	-	-
R6085	ERJ3GEYJ472V	-	-	-
R6086	ERJ3GEYJ103V	-	-	-
R6087	ERJ3GEYJ102V	-	-	-
R6088	ERJ3GEYJ103V	-	-	-
R6089	ERJ3GEYJ272V	-	-	-
R6090	ERJ3GEYJ103V	-	-	-
R6091	ERJ3GEYJ562V	-	-	-
R6092	ERJ3GEYJ472V	-	-	-
R6113	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6114	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEYJ122V
C6006	ECJ1VC1H330J	-	-	ECJ1VC1H330J
C6029	ECJ1VF1A105Z	-	-	-
C6032	ECEA0JKA470B	-	-	-
C6038	ECJ1VF1E104Z	-	-	-
C6039	ECJ2VB1A105K	-	-	-
C6040	ECJ1VF1E104Z	-	-	-
C6041	ECJ2YB0J475K	-	-	-
C6042	ECJ1VB1C563K	-	-	-
IC6001	M37761VLVB	M37761VLVA	M37761VLVA	M37761VLVB
IC6006	C1AB00002140	-	-	-
K6004	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K6008	VWJ0023=X	-	-	-
K6010	VWJ0023=5	-	-	-
L6002	G0C330JA0019	-	-	G0C330JA0019
L6006	G0C680JA0019	VWJ0023=5	VWJ0023=5	VWJ0023=5
Q6003	2SB0709A0L	-	-	2SB0709A0L

Note:
Marked *(spare) parts are not assembled

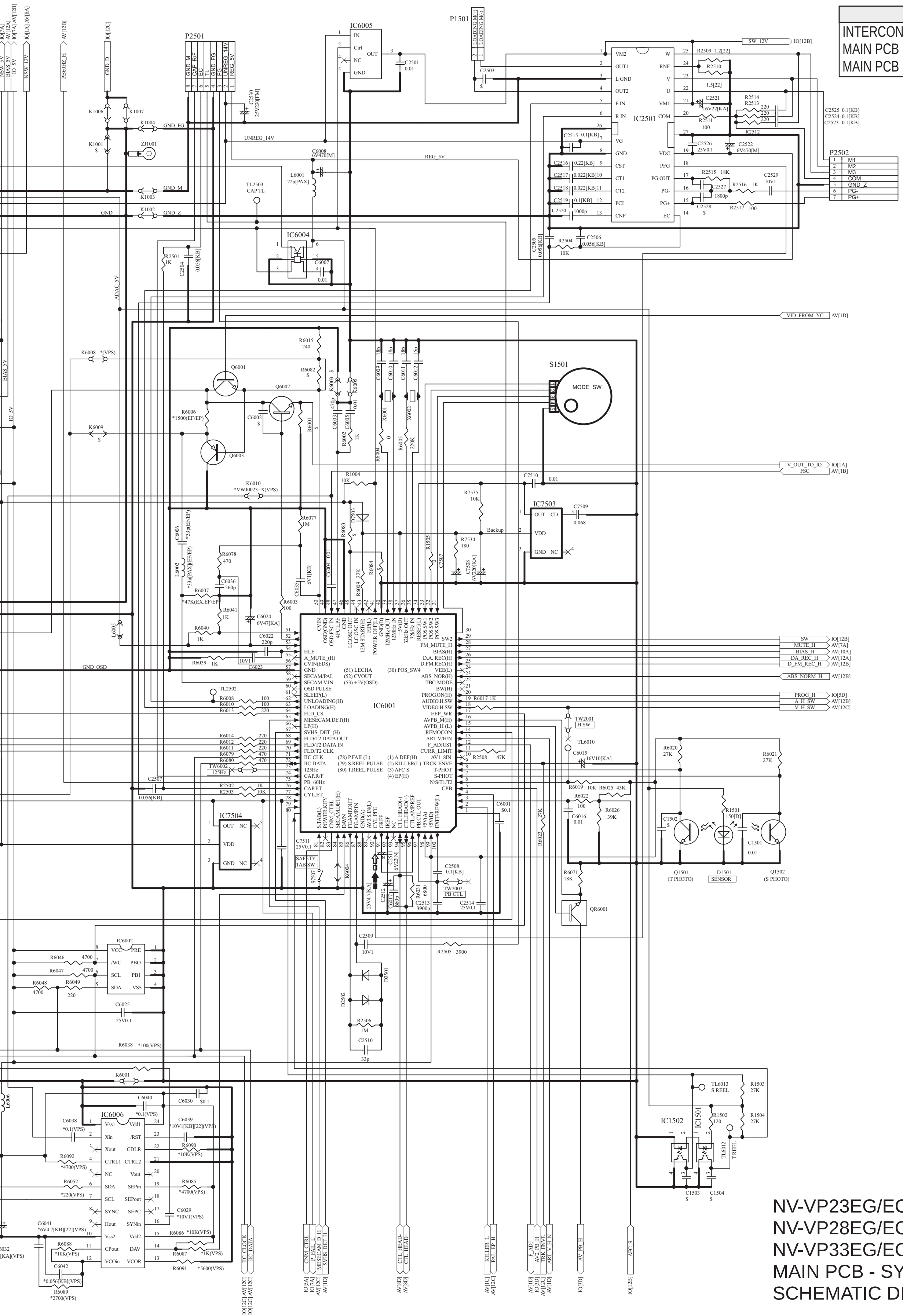
Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NAVIGATION

INTERCONNECTION

MAIN PCB - AUDIO / VIDEO

MAIN PCB - I/O

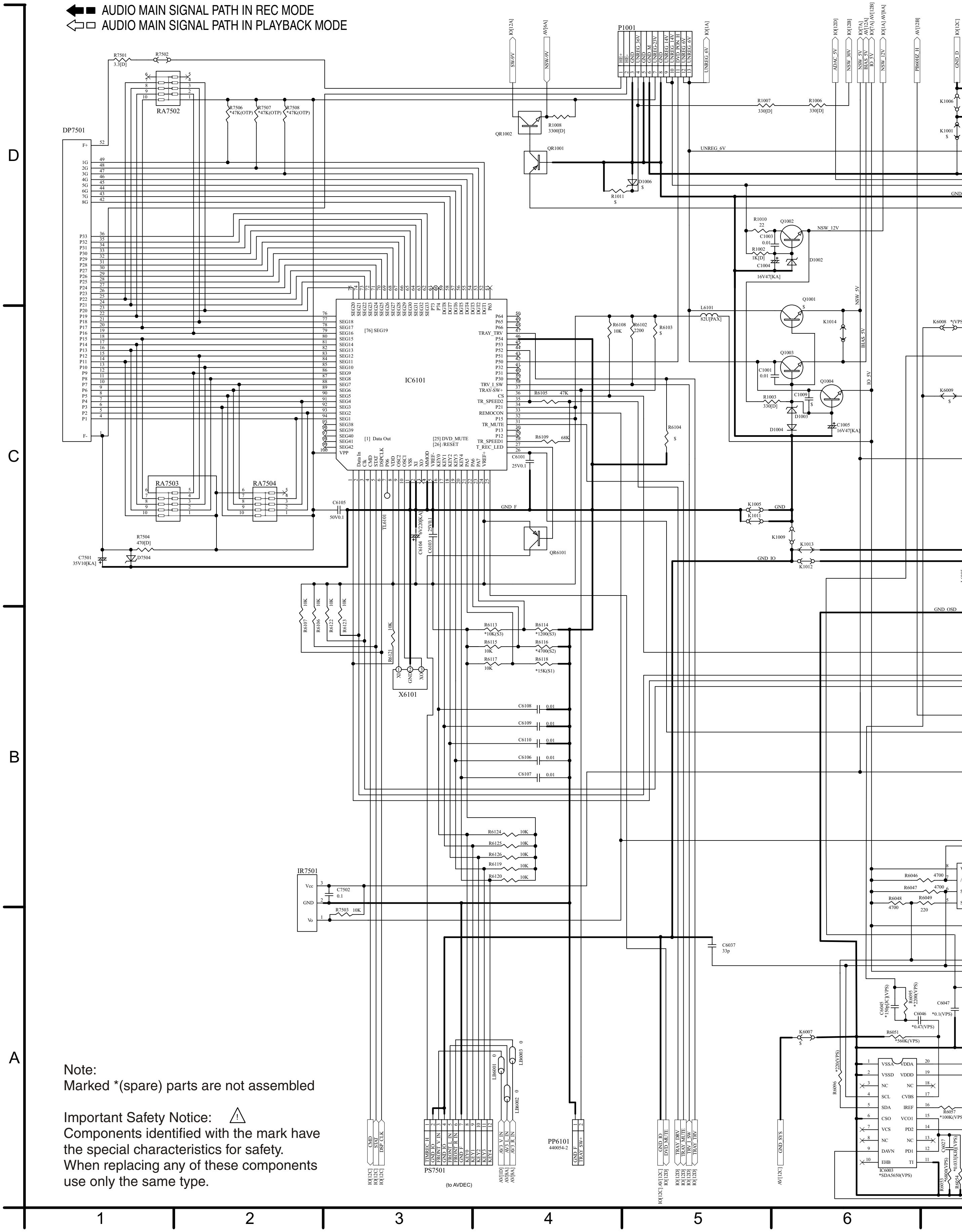


IC6005
IC2501
P1501
P2501
P2502
IC6004
IC6001
IC7503
IC7504
IC6002
IC6006
IC1502
IC1501
S1501
MODE_SW
Q6001
Q6002
Q6003
QR6001
Q1501 (T PHOTO)
D1501 SENSOR
Q1502 (S PHOTO)
SW_12V
VID_FROM_YC
V_OUT_TO_IO
FSC
SW
MUTE_H
BIAS_H
DA_REC_H
D_FM_REC_H
ABS_NORM_H
PROG_H
A_H_SW
V_H_SW
UNREG_14V
REG_5V
GND_FG
GND_M
GND_Z
GND_OSD
IIC_CLOCK
IIC_DATA
CNM_CTRL
P_FAIL_L
MESECAM_D_H
SVHS_DET_H
CTL_HEAD+
CTL_HEAD-
KILLER_L
PAL_EP_H
F_ADJ
AV2_PB_H
TRK_ENVE
ART_V_H_N
AV_PB_H
AFC_S

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - SYSCON & SERVO
SCHEMATIC DIAGRAM

7	8	9	10	11	12

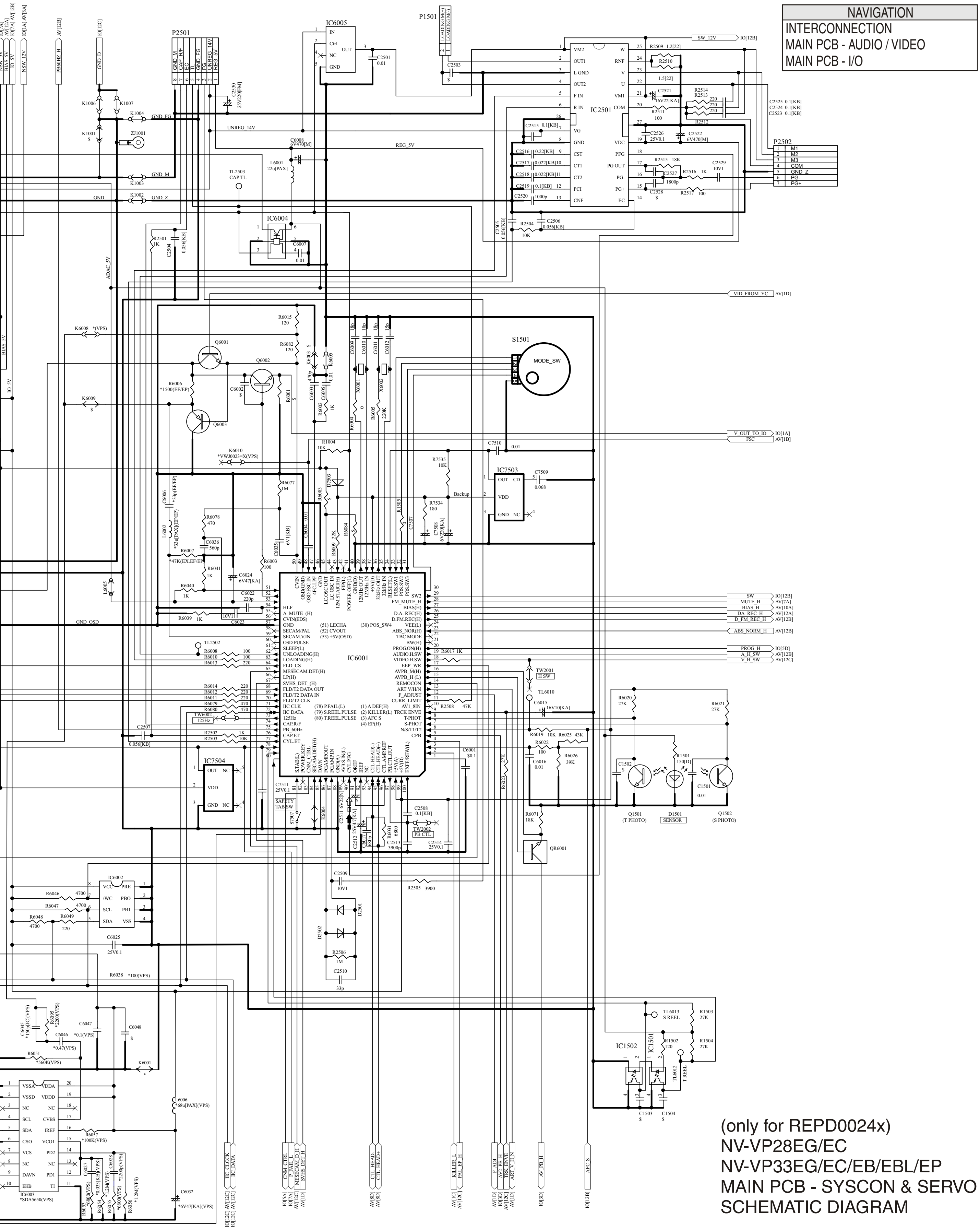
18.5. MAIN PCB - SYSCON & SERVO (ONLY REPD0024x)


AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DP7501
RA7502
RA7503
RA7504
IC6101
P1001
QR1001
QR1002
Q1001
Q1002
Q1003
Q1004
D1002
D1004
D1006
L6101
QR6101
X6101
IR7501
PS7501
PP6101
IC6003 *SDA5650(VPS)
UNREG_6V
NSW_12V
GND_F
GND_IO
GND_OSD
(to AVDEC)
D
C
B
A
1
2
3
4
5
6

Note:
Marked *(spare) parts are not assembled

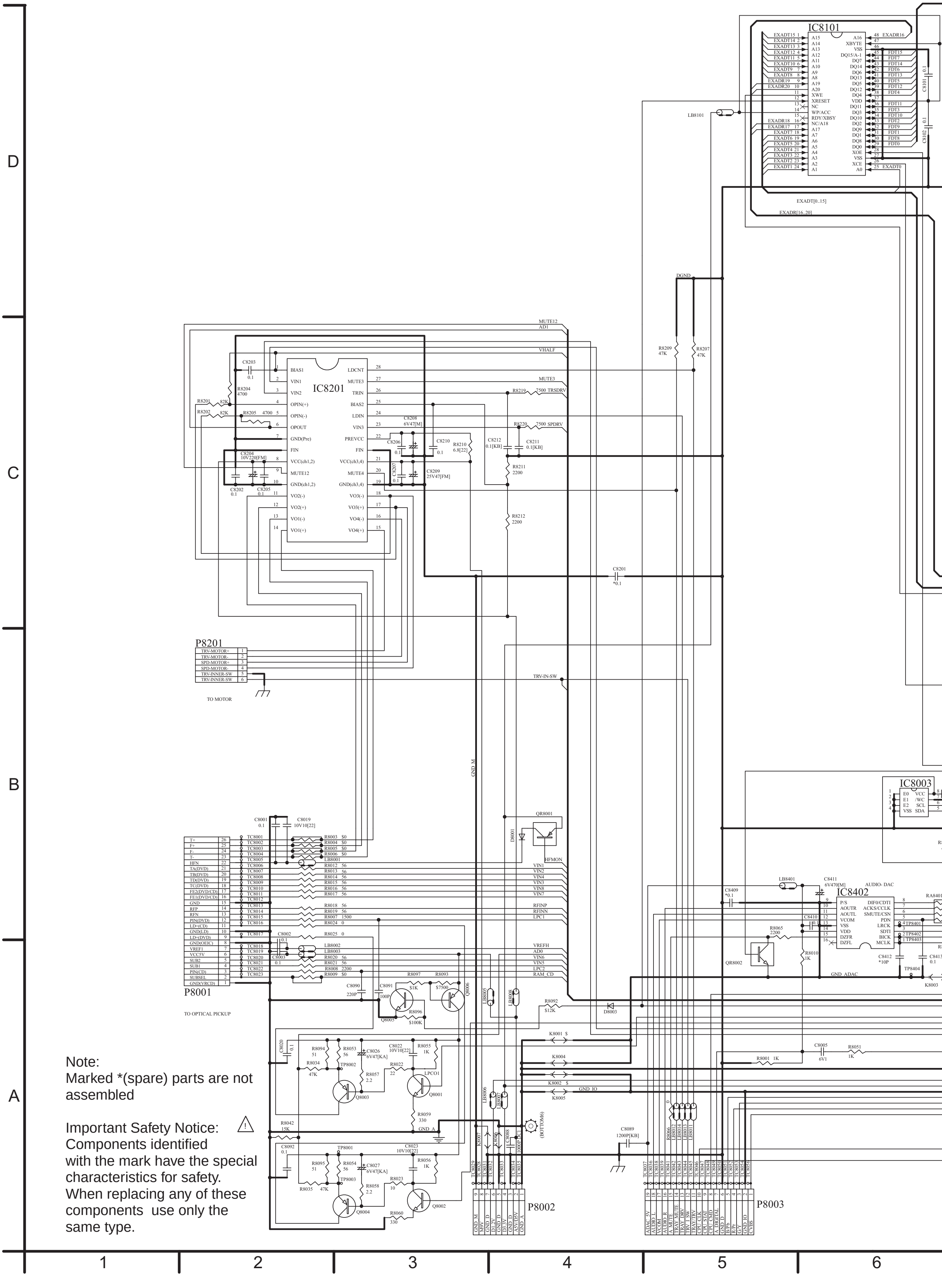
Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NAVIGATION
INTERCONNECTION
MAIN PCB - AUDIO / VIDEO
MAIN PCB - I/O


P2501
IC6005
P1501
IC2501
P2502
M1
M2
M3
COM
GND_Z
PG-
PG+
SW_12V
IO[12B]
UNREG_14V
REG_5V
GND_FG
GND_M
GND_Z
GND
TL2503
CAP TL
IC6004
L6001
ADAC_5V
VID_FROM_YC
AV[1D]
S1501
MODE_SW
Q6001
Q6002
Q6003
X6001
X6002
V_OUT_TO_IO
FSC
IO[1A]
AV[1B]
IC7503
Backup
IC6001
SW
MUTE_H
BIAS_H
DA_REC_H
D_FM_REC_H
ABS_NORM_H
PROG_H
A_H_SW
V_H_SW
IO[12B]
AV[7A]
AV[10A]
AV[12A]
AV[12B]
IO[5D]
AV[12C]
GND_OSD
TL2502
TW6002
125Hz
IC7504
TW2001
H SW
TL6010
Q1501
(T PHOTO)
D1501
SENSOR
Q1502
(S PHOTO)
QR6001
SAFETY TAB SW
TW2002
PB CTL
IC6002
D2501
D2502
TL6013
S REEL
IC1502
IC1501
TL6012
T REEL
IC6003
*SDA5650(VPS)
IIC_CLOCK
IIC_DATA
CNM_CTRL
P_FAIL_L
MESECAM_D_H
SVHS_DET_H
CTL_HEAD-
CTL_HEAD+
KILLER_L
PAL_EP_H
F_ADJ
AVC_PB_H
TRK_ENVE
ART_V_H_N
AV_PB_H
AFC_S
7
8
9
10
11
12

(only for REPD0024x)
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - SYSCON & SERVO
SCHEMATIC DIAGRAM

18.6. AV DECODER PCB

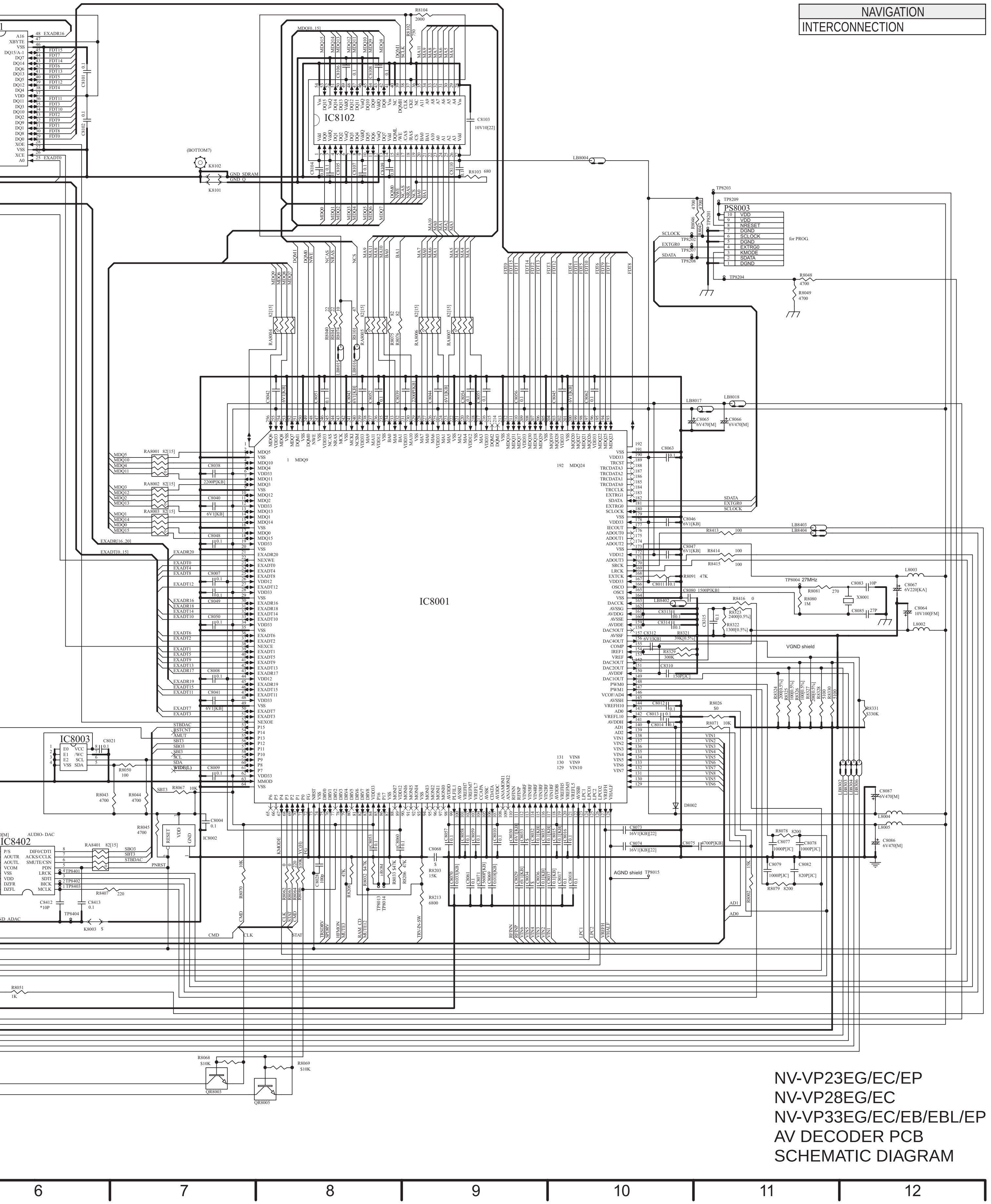

IC8101
IC8201
IC8003
IC8402
AUDIO- DAC
P8201
TRV-MOTOR+
TRV-MOTOR-
SPD-MOTOR+
SPD-MOTOR-
TRV-INNER-SW
TRV-INNER-SW
TO MOTOR
P8001
TO OPTICAL PICKUP
P8002
P8003
EXADT[0..15]
EXADR[16..20]
DGND
GND_M
GND_ADAC
GND_IO
TRV-IN-SW
D
C
B
A
1
2
3
4
5
6

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

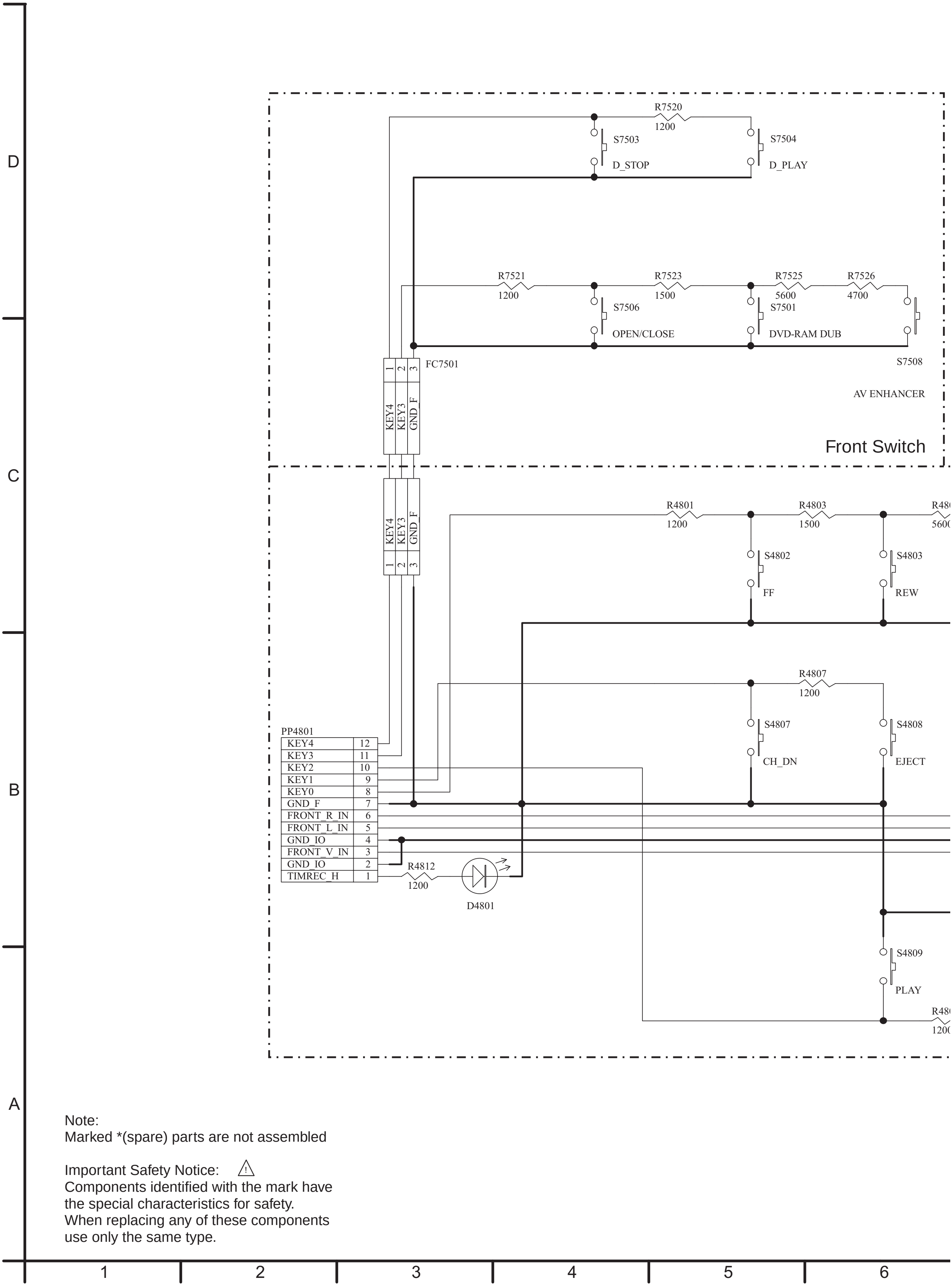
NAVIGATION

INTERCONNECTION


IC8001
IC8102
IC8003
IC8402
AUDIO- DAC
PS8003
for PROG.
VDD
VDD
NRESET
DGND
SCLOCK
DGND
EXTRG0
KMODE
SDATA
DGND
SCLOCK
EXTGR0
SDATA
TP8203
TP8209
TP8202
TP8207
TP8208
TP8204
R8048 4700
R8049 4700
LB8004
LB8017
LB8018
LB8403
LB8404
C8065 6V470[M]
C8066 6V470[M]
TP8004 27MHz
X8001
L8003
L8002
L8004
L8005
C8067 6V220[KA]
C8064 10V100[FM]
C8087 6V470[M]
C8086 6V470[M]
VGND shield
AGND shield
TP8015
D8002
R8331 330K
K8102
K8101
(BOTTOM7)
GND_SDRAM
GND_Q
R8104 2000
R8103 680
C8103 10V10[22]
EXADR[16..20]
EXADT[0..15]
RA8001 82[15]
RA8002 82[15]
RA8003 82[15]
RA8004 82[15]
RA8005 82[15]
RA8006 82[15]
RA8007 82[15]
RA8401 82[15]
R8050 100
R8043 4700
R8044 4700
R8045 4700
R8067 10K
RESET
VDD
GND
IC8002
R8407 220
C8412 *10P
C8413 0.1
TP8404
K8003
R8051 1K
R8068 $10K
R8069 $10K
QR8003
QR8005
CMD
CLK
STAT
R8070
R8203 15K
R8213 6800
KMODE
AD1
AD0
LPC1
LPC2
VREFH
VHALF
TRV-IN-SW
RAM_CD
MUTE12
HIHMON
SPDRV
TRSDRV
6
7
8
9
10
11
12

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
AV DECODER PCB
SCHEMATIC DIAGRAM

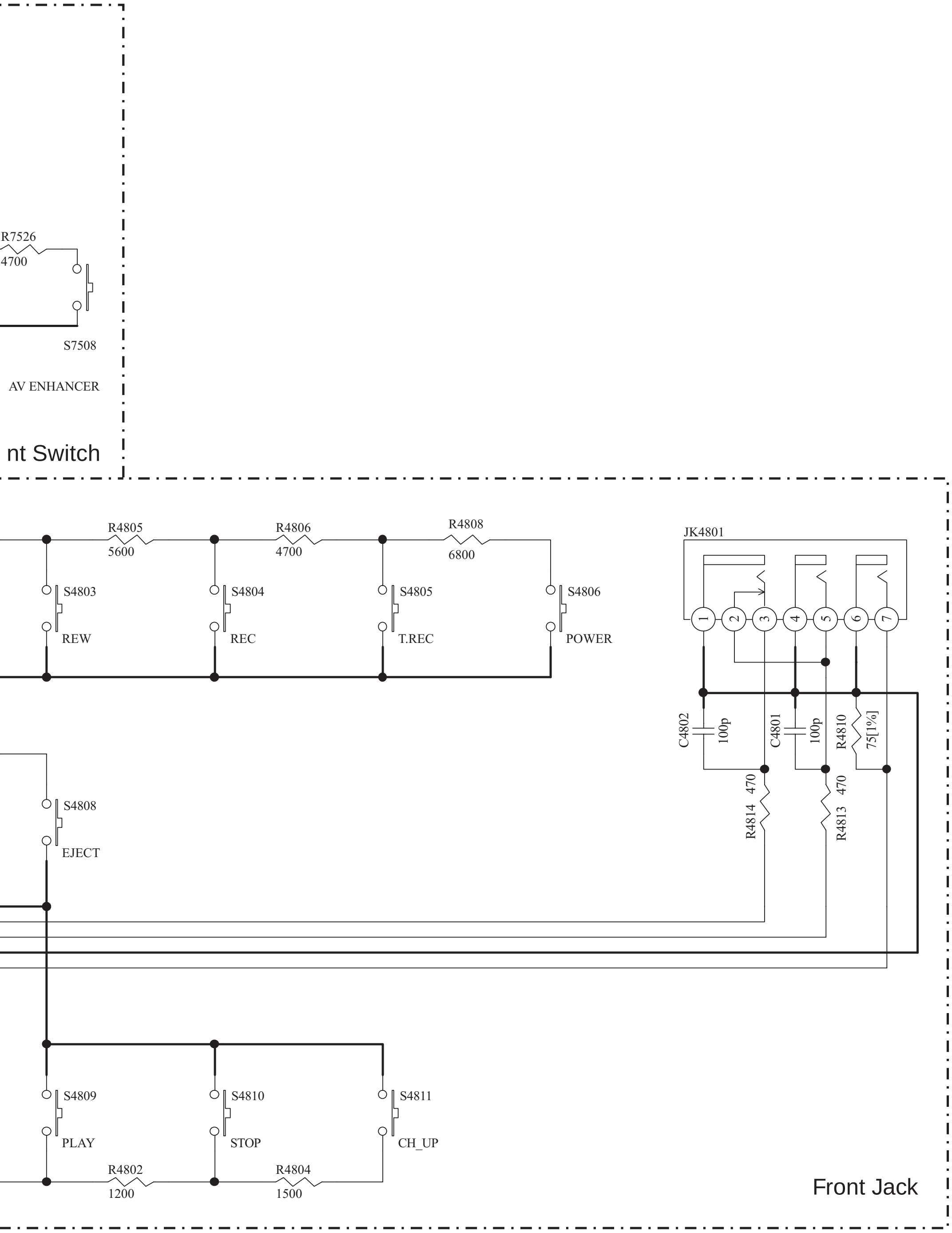
18.7. FRONT PANEL PCB



D
C
B
A
1
2
3
4
5
6
R7520
1200
S7503
D_STOP
S7504
D_PLAY
R7521
1200
R7523
1500
R7525
5600
R7526
4700
S7506
OPEN/CLOSE
S7501
DVD-RAM DUB
S7508
AV ENHANCER
FC7501
KEY4
KEY3
GND_F
Front Switch
R4801
1200
R4803
1500
5600
S4802
FF
S4803
REW
R4807
1200
S4807
CH_DN
S4808
EJECT
PP4801
KEY4 12
KEY3 11
KEY2 10
KEY1 9
KEY0 8
GND_F 7
FRONT_R_IN 6
FRONT_L_IN 5
GND_IO 4
FRONT_V_IN 3
GND_IO 2
TIMREC_H 1
R4812
1200
D4801
S4809
PLAY
1200

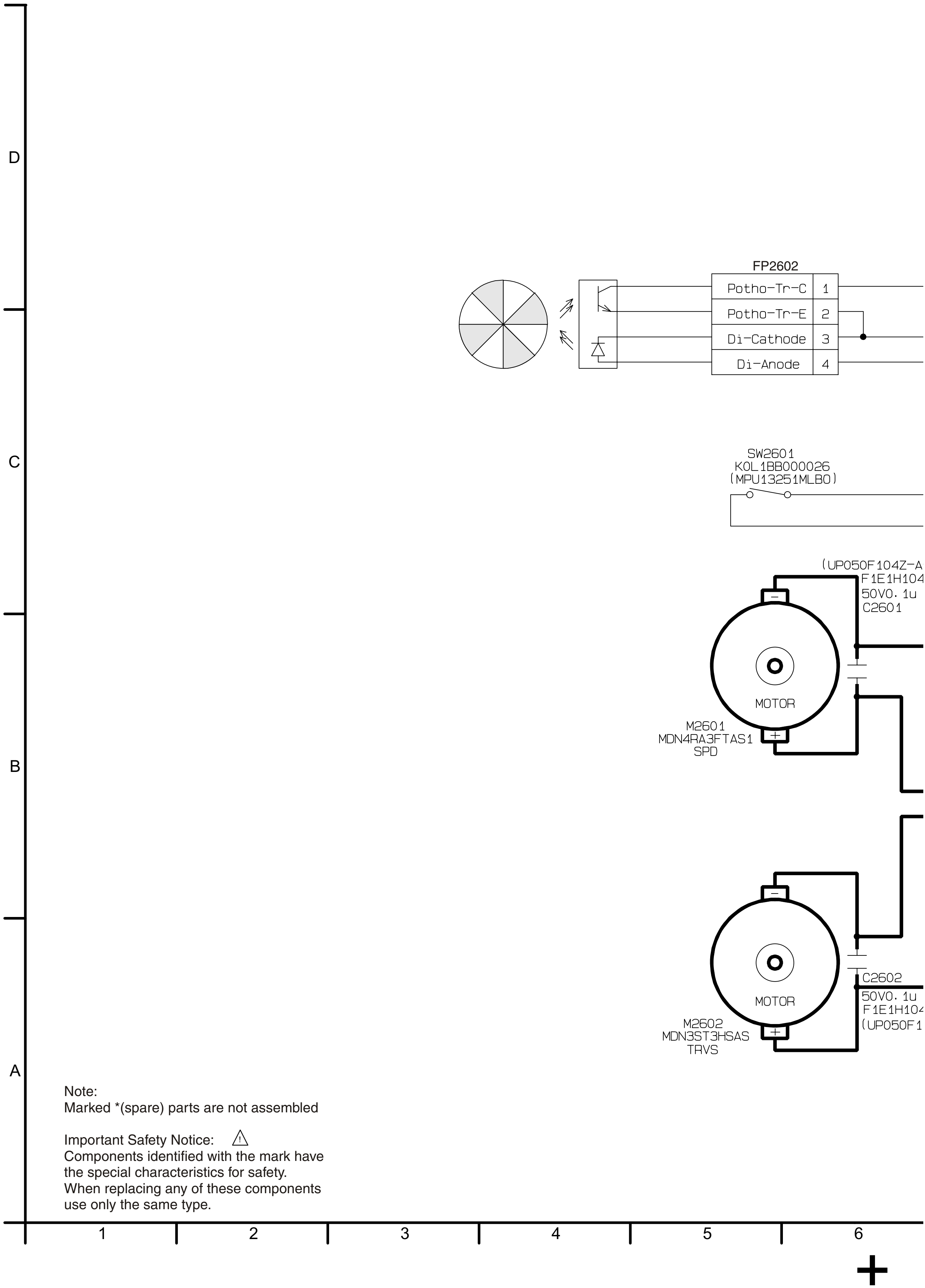
Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.


R7526
4700
S7508
AV ENHANCER
nt Switch
R4805
5600
R4806
4700
R4808
6800
JK4801
S4803
REW
S4804
REC
S4805
T.REC
S4806
POWER
1
2
3
4
5
6
7
C4802
100p
C4801
100p
R4810
75[1%]
R4814
470
R4813
470
S4808
EJECT
S4809
PLAY
S4810
STOP
S4811
CH_UP
R4802
1200
R4804
1500
Front Jack

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
FRONT PANEL PCB
SCHEMATIC DIAGRAM

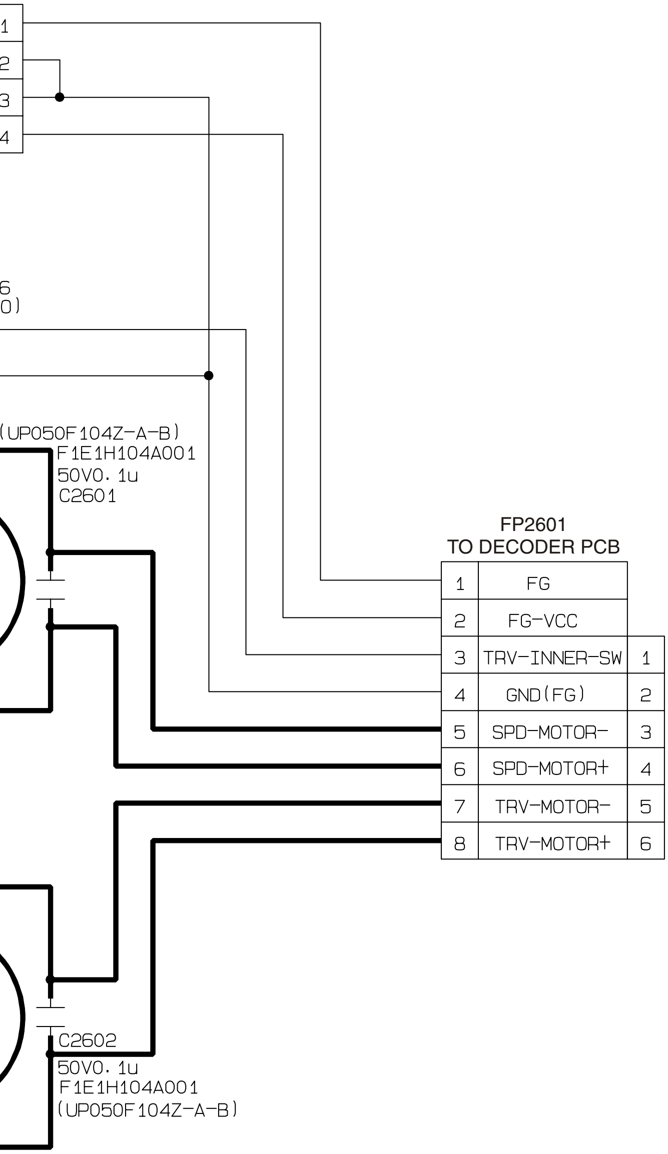
18.8. TERMINAL PCB


D
C
B
A
1
2
3
4
5
6
FP2602
Potho-Tr-C 1
Potho-Tr-E 2
Di-Cathode 3
Di-Anode 4
SW2601
K0L1BB000026
(MPU13251MLB0)
(UP050F104Z-A
F1E1H104
50V0.1u
C2601
MOTOR
M2601
MDN4RA3FTAS1
SPD
MOTOR
C2602
50V0.1u
F1E1H104
(UP050F1
M2602
MDN3ST3HSAS
TRVS

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

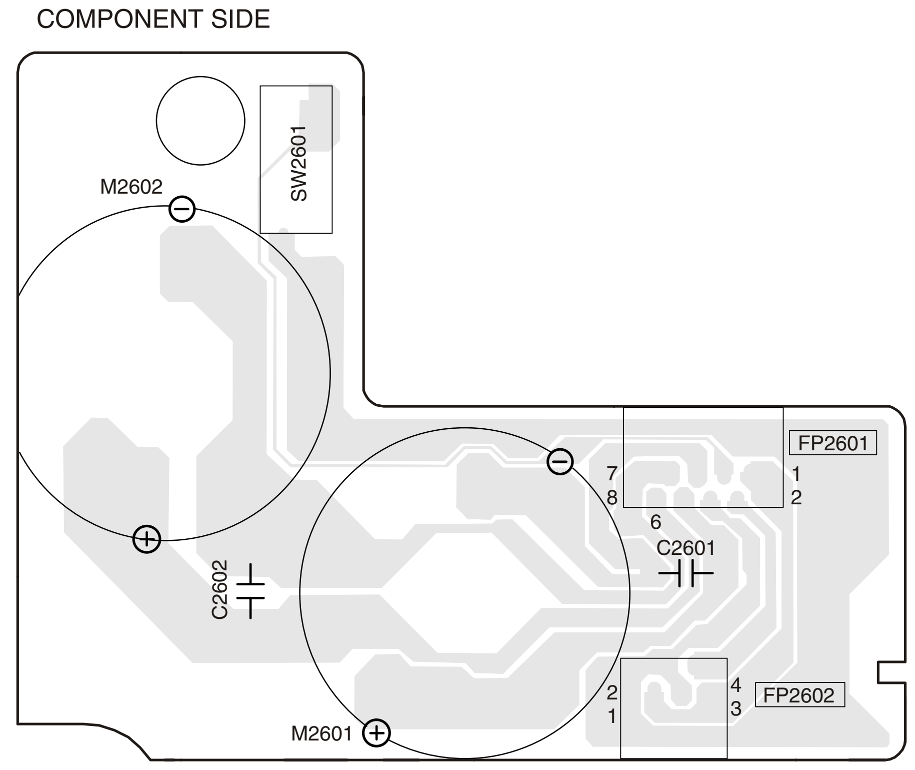
NAVIGATION
INTERCONNECTION


1
2
3
4
6
0)
(UP050F104Z-A-B)
F1E1H104A001
50V0.1u
C2601
FP2601
TO DECODER PCB
1 FG
2 FG-VCC
3 TRV-INNER-SW 1
4 GND(FG) 2
5 SPD-MOTOR- 3
6 SPD-MOTOR+ 4
7 TRV-MOTOR- 5
8 TRV-MOTOR+ 6
C2602
50V0.1u
F1E1H104A001
(UP050F104Z-A-B)

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
TERMINAL PCB
SCHEMATIC DIAGRAM

19.9. TERMINAL PCB

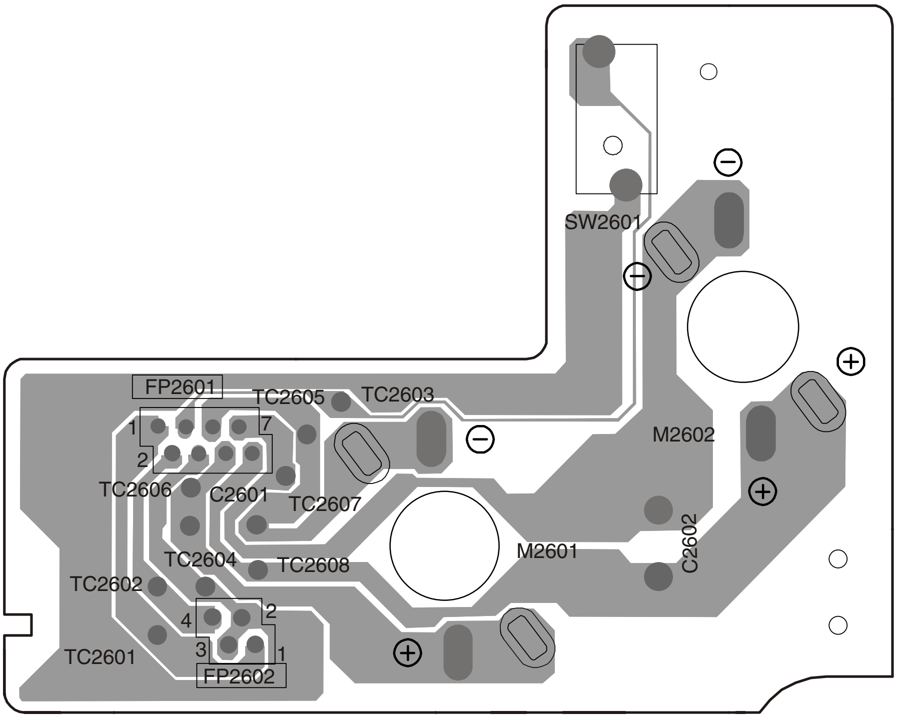
(REP3606A-C)


COMPONENT SIDE
M2602
SW2601
FP2601
7
8
1
2
6
C2601
C2602
2
1
4
3
FP2602
M2601
D
C
B
A
1
2
3
4
5
6

TERMINAL PCB	
FP2601	C5
FP2602	B5
M2601	B3
M2602	D2
SW2601	D3

ADDRESS INFORMATION

SOLDER SIDE


SW2601
FP2601
TC2605
TC2603
1
7
2
TC2606
C2601
TC2607
M2602
TC2604
TC2608
M2601
C2602
TC2602
4
2
3
1
TC2601
FP2602

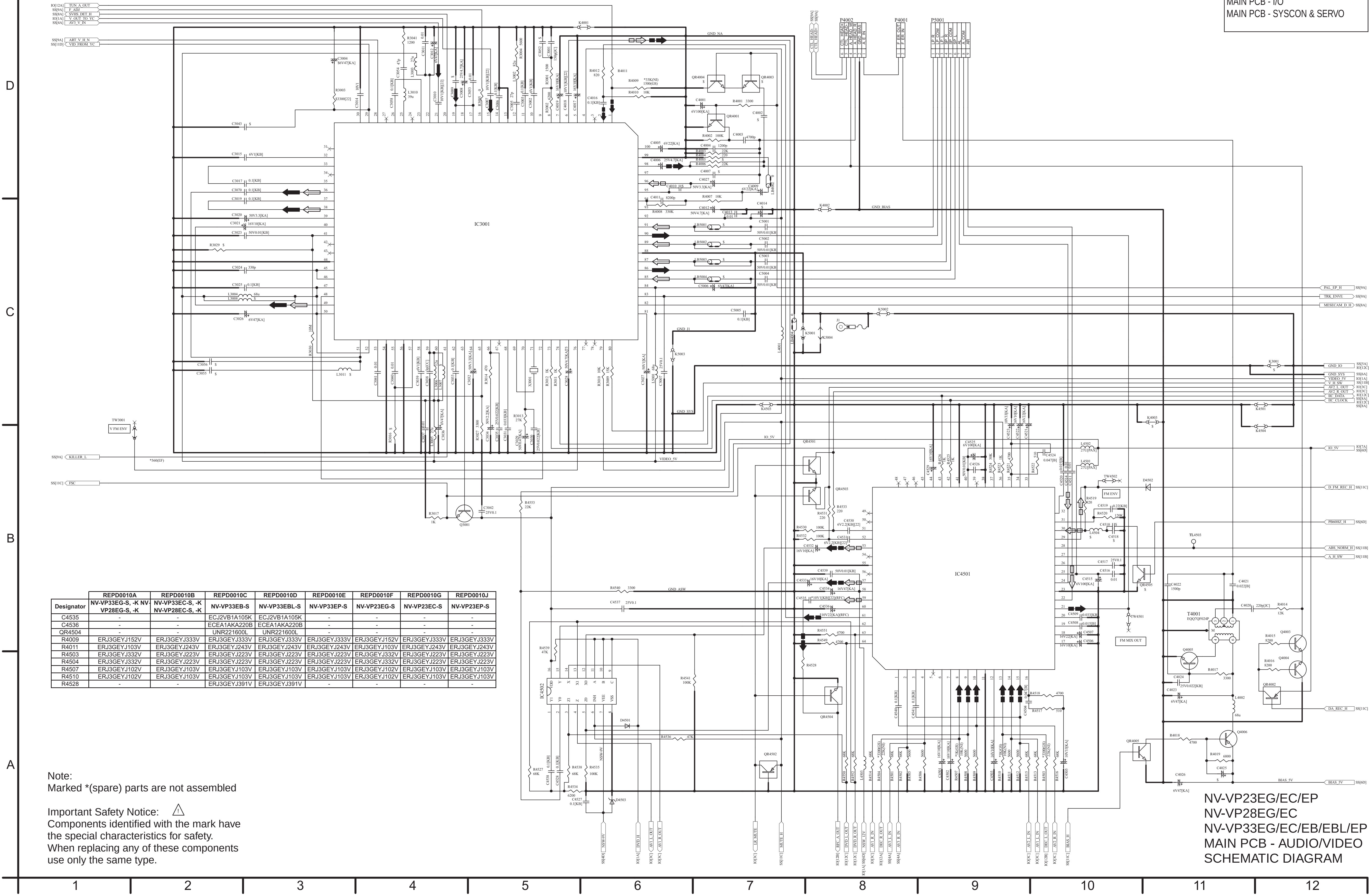
TERMINAL PCB	
FP2601	C8
FP2602	B8
M2601	C9
M2602	C10
SW2601	D10

ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
TERMINAL PCB
COMPONENT SIDE / SOLDER SIDE

◀■ AUDIO MAIN SIGNAL PATH IN REC MODE
◁□ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
◀ VIDEO MAIN SIGNAL PATH IN REC MODE
◁ VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

NAVIGATION
INTERCONNECTION
MAIN PCB - I/O
MAIN PCB - SYSCON & SERVO


D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
IC3001
IC4501
IC4502
TUN_A_OUT
F_ADJ
SVHS_DET_H
V_OUT_TO_YC
AV3_V_IN
ART_V_H_N
VID_FROM_YC
GND_NA
GND_BIAS
GND_J1
GND_SYS
GND_ASW
IO_5V
VIDEO_5V
P4002
P4001
P5001
QR4001
QR4003
QR4004
QR4501
QR4502
QR4503
QR4504
QR4505
QR4002
QR4005
Q3001
Q4003
Q4004
Q4005
Q4006
T4001
TW3001
V FM ENV
KILLER_L
FSC
PAL_EP_H
TRK_ENVE
MESECAM_D_H
GND_IO
GND_SYS
VIDEO_5V
V_H_SW
AV2_L_OUT
AV2_R_OUT
IIC_DATA
IIC_CLOCK
IO_5V
D_FM_REC_H
PB60HZ_H
ABS_NORM_H
A_H_SW
DA_REC_H
BIAS_5V
FM ENV
FM MIX OUT
TW4501
TW4502
TL4503
J1
NSW/4V
DVD_H
AV1_L_OUT
AV1_R_OUT
LR_MUTE
MUTE_H
REC_A_OUT
DVD_L_OUT
DVD_R_OUT
NSW_12V
DEC_R_OUT
AV3_L_IN
AV3_R_IN
AV1_L_IN
AV1_R_IN
DEC_L_OUT
AV2_R_IN
BIAS_H

	REPD0010A	REPD0010B	REPD0010C	REPD0010D	REPD0010E	REPD0010F	REPD0010G	REPD0010J
Designator	NV-VP33EG-S, -K NV-VP28EG-S, -K	NV-VP33EC-S, -K NV-VP28EC-S, -K	NV-VP33EB-S	NV-VP33EBL-S	NV-VP33EP-S	NV-VP23EG-S	NV-VP23EC-S	NV-VP23EP-S
C4535	-	-	ECJ2VB1A105K	ECJ2VB1A105K	-	-	-	-
C4536	-	-	ECEA1AKA220B	ECEA1AKA220B	-	-	-	-
QR4504	-	-	UNR221600L	UNR221600L	-	-	-	-
R4009	ERJ3GEYJ152V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ333V	ERJ3GEYJ152V	ERJ3GEYJ333V	ERJ3GEYJ333V
R4011	ERJ3GEYJ103V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ243V	ERJ3GEYJ103V	ERJ3GEYJ243V	ERJ3GEYJ243V
R4503	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V
R4504	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ223V	ERJ3GEYJ332V	ERJ3GEYJ223V	ERJ3GEYJ223V
R4507	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V
R4510	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ102V	ERJ3GEYJ103V	ERJ3GEYJ103V
R4528	-	-	ERJ3GEYJ391V	ERJ3GEYJ391V	-	-	-	-

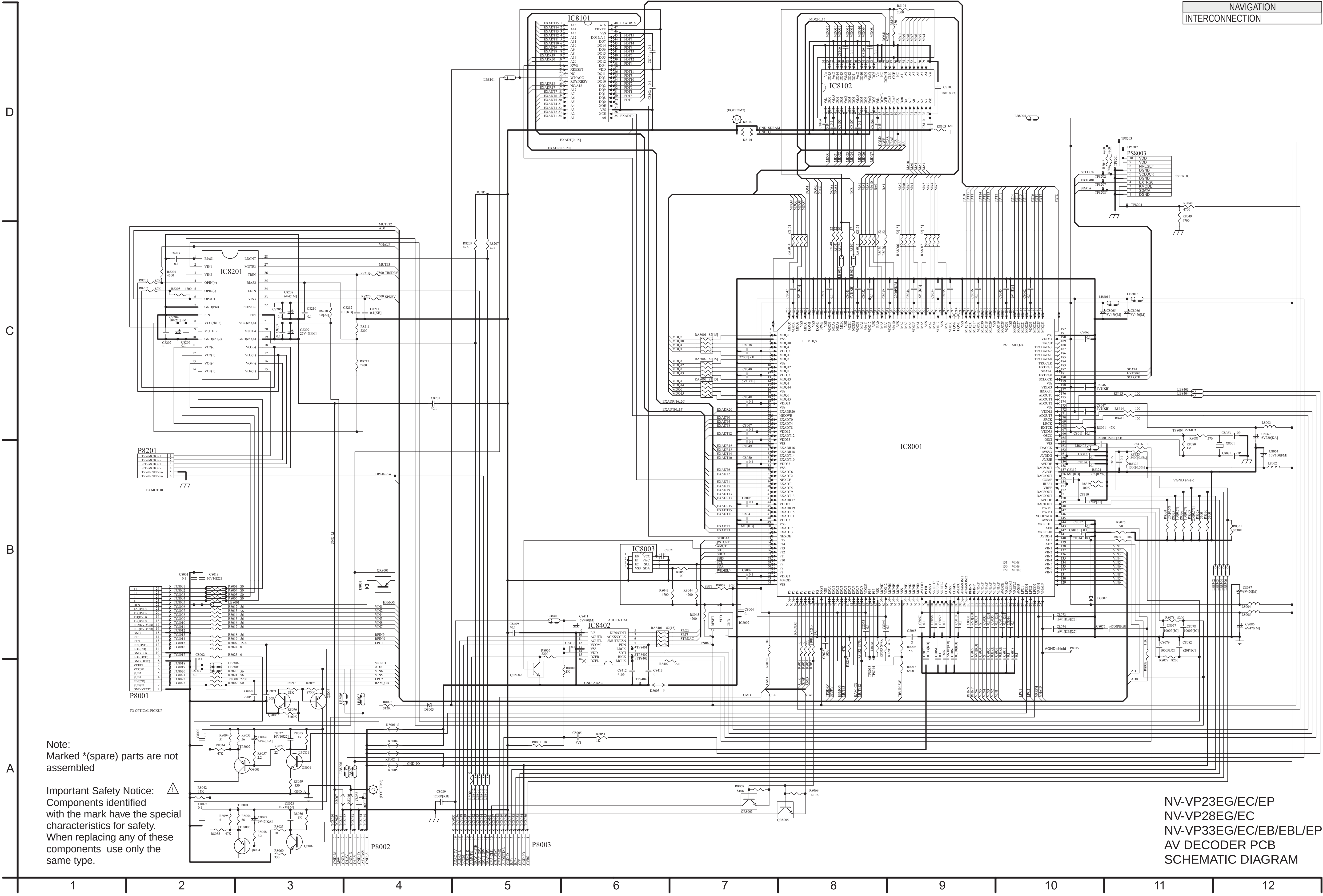
Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - AUDIO/VIDEO SCHEMATIC DIAGRAM

NAVIGATION

INTERCONNECTION


IC8101
IC8102
IC8201
IC8001
IC8003
IC8402
AUDIO- DAC
IC8002
P8201
TO MOTOR
P8001
TO OPTICAL PICKUP
P8002
P8003
PS8003
for PROG
VGND shield
AGND shield
(BOTTOM7)
(BOTTOM6)
EXADT[0..15]
EXADR[16..20]
MDQ[0..15]
GND_SDRAM
GND_IO
GND_ADAC
GND_M
QR8001
QR8002
QR8003
QR8005
X8001
27MHz
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

Note:
Marked *(spare) parts are not assembled

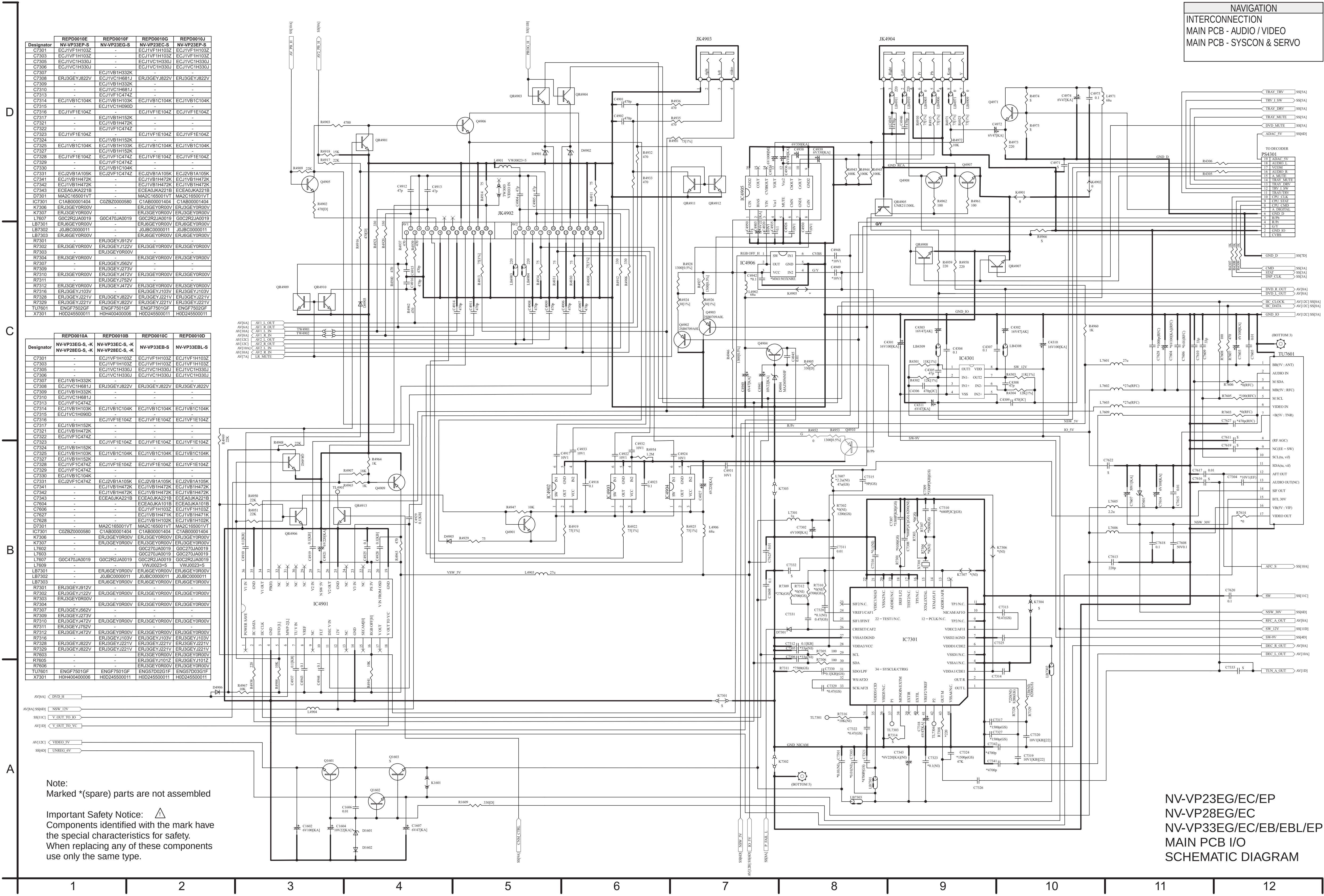
Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
AV DECODER PCB
SCHEMATIC DIAGRAM

NAVIGATION
INTERCONNECTION
MAIN PCB - AUDIO / VIDEO
MAIN PCB - SYSCON & SERVO

	REPD0010E	REPD0010F	REPD0010G	REPD0010J
Designator	NV-VP33EP-S	NV-VP23EG-S	NV-VP23EC-S	NV-VP23EP-S
C7301	ECJ1VF1H103Z	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7303	ECJ1VF1H103Z	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7305	ECJ1VC1H330J	-	ECJ1VC1H330J	ECJ1VC1H330J
C7306	ECJ1VC1H330J	-	ECJ1VC1H330J	ECJ1VC1H330J
C7307	-	ECJ1VB1H332K	-	-
C7308	ERJ3GEYJ822V	ECJ1VC1H681J	ERJ3GEYJ822V	ERJ3GEYJ822V
C7309	-	ECJ1VB1H332K	-	-
C7310	-	ECJ1VC1H681J	-	-
C7313	-	ECJ1VF1C474Z	-	-
C7314	ECJ1VB1C104K	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K
C7315	-	ECJ1VC1H090D	-	-
C7316	ECJ1VF1E104Z	-	ECJ1VF1E104Z	ECJ1VF1E104Z
C7317	-	ECJ1VB1H152K	-	-
C7321	-	ECJ1VB1H472K	-	-
C7322	-	ECJ1VF1C474Z	-	-
C7323	ECJ1VF1E104Z	-	ECJ1VF1E104Z	ECJ1VF1E104Z
C7324	-	ECJ1VB1H152K	-	-
C7325	ECJ1VB1C104K	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K
C7327	-	ECJ1VB1H152K	-	-
C7328	ECJ1VF1E104Z	ECJ1VF1C474Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7329	-	ECJ1VF1C474Z	-	-
C7330	-	ECJ1VB1C104K	-	-
C7331	ECJ2VB1A105K	ECJ2VF1C474Z	ECJ2VB1A105K	ECJ2VB1A105K
C7341	ECJ1VB1H472K	-	ECJ1VB1H472K	ECJ1VB1H472K
C7342	ECJ1VB1H472K	-	ECJ1VB1H472K	ECJ1VB1H472K
C7343	ECEA0JKA221B	-	ECEA0JKA221B	ECEA0JKA221B
D7301	MA2C165001VT	-	MA2C165001VT	MA2C165001VT
IC7301	C1AB00001404	C0ZBZ0000580	C1AB00001404	C1AB00001404
K7306	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
K7307	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
L7607	G0C2R2JA0019	G0C470JA0019	G0C2R2JA0019	G0C2R2JA0019
LB7301	ERJ6GEY0R00V	-	ERJ6GEY0R00V	ERJ6GEY0R00V
LB7302	J0JBC0000011	-	J0JBC0000011	J0JBC0000011
LB7303	ERJ6GEY0R00V	-	ERJ6GEY0R00V	ERJ6GEY0R00V
R7301	-	ERJ3GEYJ912V	-	-
R7302	ERJ3GEY0R00V	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7303	-	ERJ3GEY0R00V	-	-
R7304	ERJ3GEY0R00V	-	ERJ3GEY0R00V	ERJ3GEY0R00V
R7307	-	ERJ3GEYJ562V	-	-
R7309	-	ERJ3GEYJ273V	-	-
R7310	ERJ3GEY0R00V	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7311	-	ERJ3GEYJ752V	-	-
R7312	ERJ3GEY0R00V	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7316	ERJ3GEYJ103V	-	ERJ3GEYJ103V	ERJ3GEYJ103V
R7328	ERJ3GEYJ221V	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7329	ERJ3GEYJ221V	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V
TU7601	ENGF7502GF	ENGF7501GF	ENGF7501GF	ENGF7502GF
X7301	H0D245500011	H0H400400006	H0D245500011	H0D245500011

	REPD0010A	REPD0010B	REPD0010C	REPD0010D
Designator	NV-VP33EG-S, -K NV-VP28EG-S, -K	NV-VP33EC-S, -K NV-VP28EC-S, -K	NV-VP33EB-S	NV-VP33EBL-S
C7301	-	ECJ1VF1H103Z	ECJ1VF1H103Z	ECJ1VF1H103Z
C7303	-	ECJ1VF1H103Z	ECJ1VF1H103Z	ECJ1VF1H103Z
C7305	-	ECJ1VC1H330J	ECJ1VC1H330J	ECJ1VC1H330J
C7306	-	ECJ1VC1H330J	ECJ1VC1H330J	ECJ1VC1H330J
C7307	ECJ1VB1H332K	-	-	-
C7308	ECJ1VC1H681J	ERJ3GEYJ822V	ERJ3GEYJ822V	ERJ3GEYJ822V
C7309	ECJ1VB1H332K	-	-	-
C7310	ECJ1VC1H681J	-	-	-
C7313	ECJ1VF1C474Z	-	-	-
C7314	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K	ECJ1VB1C104K
C7315	ECJ1VC1H090D	-	-	-
C7316	-	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7317	ECJ1VB1H152K	-	-	-
C7321	ECJ1VB1H472K	-	-	-
C7322	ECJ1VF1C474Z	-	-	-
C7323	-	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7324	ECJ1VB1H152K	-	-	-
C7325	ECJ1VB1H103K	ECJ1VB1C104K	ECJ1VB1C104K	ECJ1VB1C104K
C7327	ECJ1VB1H152K	-	-	-
C7328	ECJ1VF1C474Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C7329	ECJ1VF1C474Z	-	-	-
C7330	ECJ1VB1C104K	-	-	-
C7331	ECJ2VF1C474Z	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K
C7341	-	ECJ1VB1H472K	ECJ1VB1H472K	ECJ1VB1H472K
C7342	-	ECJ1VB1H472K	ECJ1VB1H472K	ECJ1VB1H472K
C7343	-	ECEA0JKA221B	ECEA0JKA221B	ECEA0JKA221B
C7604	-	-	ECEA0JKA101B	ECEA0JKA101B
C7606	-	-	ECJ1VF1H103Z	ECJ1VF1H103Z
C7627	-	-	ECJ1VB1H471K	ECJ1VB1H471K
C7628	-	-	ECJ1VB1H102K	ECJ1VB1H102K
D7301	-	MA2C165001VT	MA2C165001VT	MA2C165001VT
IC7301	C0ZBZ0000580	C1AB00001404	C1AB00001404	C1AB00001404
K7306	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K7307	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
L7602	-	-	G0C270JA0019	G0C270JA0019
L7603	-	-	G0C270JA0019	G0C270JA0019
L7607	G0C470JA0019	G0C2R2JA0019	G0C2R2JA0019	G0C2R2JA0019
L7609	-	-	VWJ0023=5	VWJ0023=5
LB7301	-	ERJ6GEY0R00V	ERJ6GEY0R00V	ERJ6GEY0R00V
LB7302	-	J0JBC0000011	J0JBC0000011	J0JBC0000011
LB7303	-	ERJ6GEY0R00V	ERJ6GEY0R00V	ERJ6GEY0R00V
R7301	ERJ3GEYJ912V	-	-	-
R7302	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7303	ERJ3GEY0R00V	-	-	-
R7304	-	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7307	ERJ3GEYJ562V	-	-	-
R7309	ERJ3GEYJ273V	-	-	-
R7310	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7311	ERJ3GEYJ752V	-	-	-
R7312	ERJ3GEYJ472V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
R7316	-	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R7328	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7329	ERJ3GEYJ822V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R7603	-	-	ERJ3GEY0R00V	ERJ3GEY0R00V
R7605	-	-	ERJ3GEYJ101Z	ERJ3GEYJ101Z
R7606	-	-	ERJ3GEY0R00V	ERJ3GEY0R00V
TU7601	ENGF7501GF	ENGF7501GF	ENG57D02G1F	ENG57D03G1F
X7301	H0H400400006	H0D245500011	H0D245500011	H0D245500011

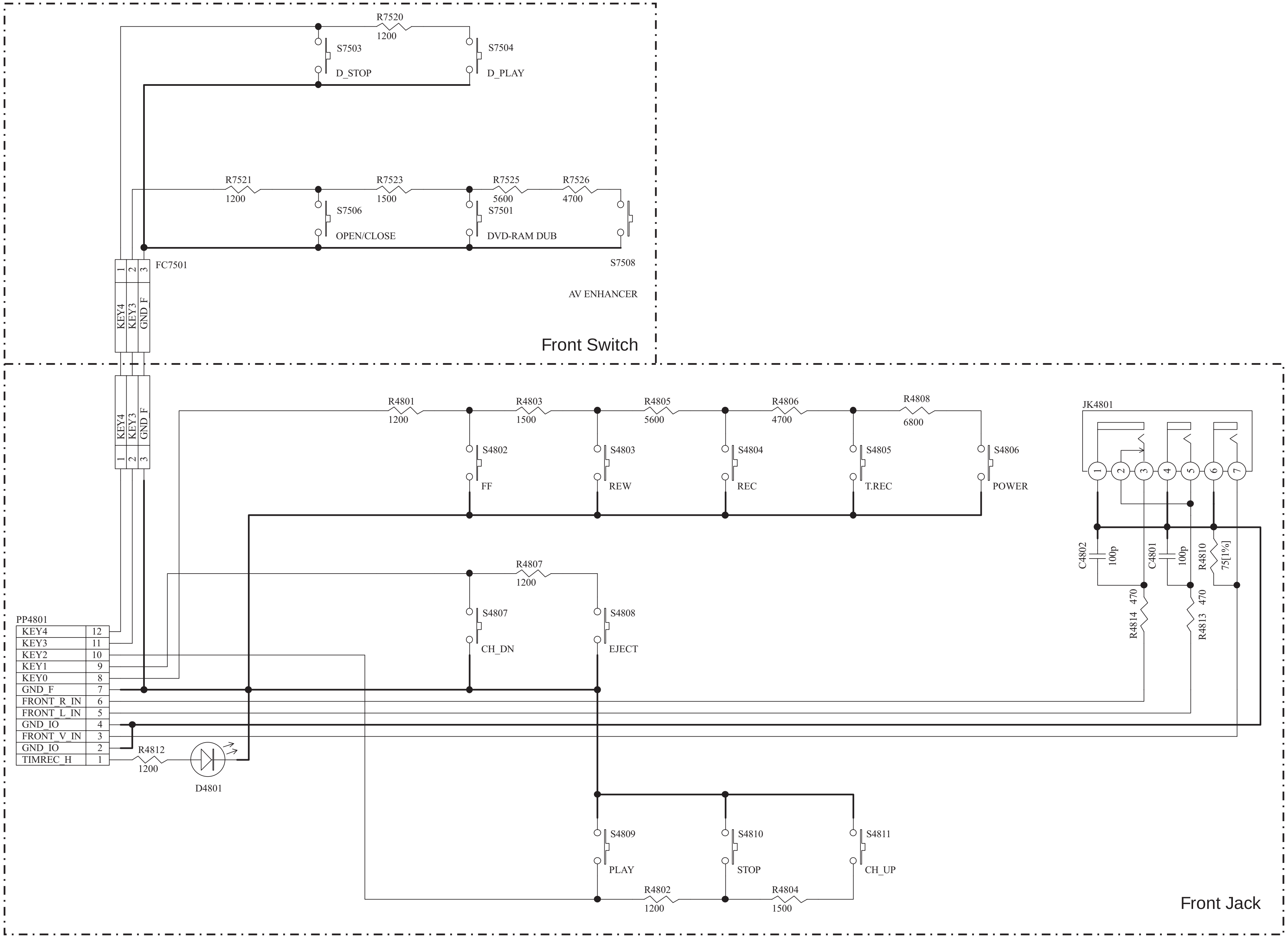


JK4903
JK4904
JK4902
IC4901
IC4902
IC4903
IC4904
IC4905
IC4906
IC4301
IC7301
PS4301
TO DECODER
TU7601
(BOTTOM 3)
(BOTTOM 5)
Q1601
Q1602
Q1603
Q4901
Q4902
Q4903
Q4904
Q4905
Q4906
Q4907
Q4908
Q4909
Q4910
Q4971
QR4901
QR4903
QR4904
QR4905
QR4906
QR4907
QR4908
QR4909
QR4910
QR4911
QR4912
QR4913
GND_D
GND_IO
GND_RCA
GND_NICAM
AV[6A] DVD_H
AV[8A] SS[6D] NSW_12V
SS[11C] V_OUT_TO_IO
AV[1D] V_OUT_TO_YC
AV[12C] VIDEO_5V
SS[6D] UNREG_6V
TRAY_TRV SS[5A]
TRV_LSW SS[5A]
TRAY_DRV SS[5A]
TRAY_MUTE SS[5A]
DVD_MUTE SS[5A]
ADAC_5V SS[6D]
GND_D SS[7D]
CMD SS[3A]
STAT SS[3A]
DSP_CLK SS[3A]
DVD_R_OUT AV[8A]
DVD_L_OUT AV[8A]
IIC_CLOCK AV[12C] SS[8A]
IIC_DATA AV[12C] SS[8A]
GND_IO AV[12C] SS[5A]
AFC_S SS[10A]
SW SS[11C]
NSW_30V SS[6D]
RFC_A_OUT AV[8A]
SW_12V SS[1D]
SW-9V SS[4D]
DEC_R_OUT AV[8A]
DEC_L_OUT AV[10A]
TUN_A_OUT AV[1D]
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB I/O
SCHEMATIC DIAGRAM

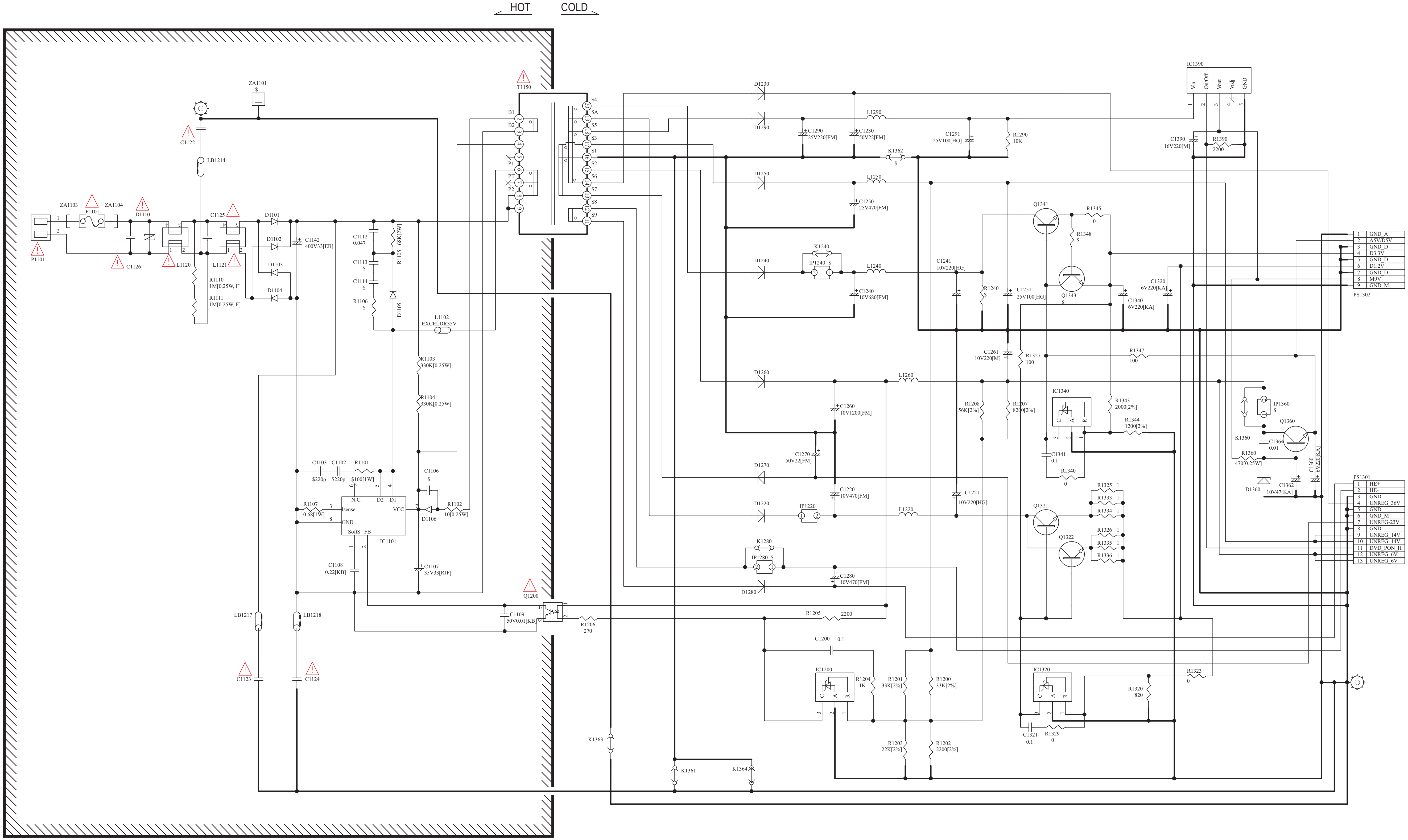

R7520
1200
S7503
D_STOP
S7504
D_PLAY
R7521
1200
R7523
1500
R7525
5600
R7526
4700
S7506
OPEN/CLOSE
S7501
DVD-RAM DUB
S7508
AV ENHANCER
FC7501
1 KEY4
2 KEY3
3 GND F
Front Switch
KEY4 1
KEY3 2
GND F 3
R4801
1200
R4803
1500
R4805
5600
R4806
4700
R4808
6800
S4802
FF
S4803
REW
S4804
REC
S4805
T.REC
S4806
POWER
JK4801
1
2
3
4
5
6
7
C4802
100p
C4801
100p
R4810
75[1%]
R4814 470
R4813 470
R4807
1200
S4807
CH_DN
S4808
EJECT
PP4801
KEY4 12
KEY3 11
KEY2 10
KEY1 9
KEY0 8
GND_F 7
FRONT_R_IN 6
FRONT_L_IN 5
GND_IO 4
FRONT_V_IN 3
GND_IO 2
TIMREC_H 1
R4812
1200
D4801
S4809
PLAY
S4810
STOP
S4811
CH_UP
R4802
1200
R4804
1500
Front Jack

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have
the special characteristics for safety.
When replacing any of these components
use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
FRONT PANEL PCB
SCHEMATIC DIAGRAM

NAVIGATION
INTERCONNECTION


HOT
COLD
T1150
ZA1101
C1122
LB1214
ZA1103
ZA1104
F1101
D1110
C1125
P1101
C1126
L1120
L1121
R1110 1M[0.25W, F]
R1111 1M[0.25W, F]
D1101
D1102
D1103
D1104
C1142 400V33[EB]
C1112 0.047
C1113 $
C1114 $
R1106 $
R1105 68K[2W]
D1105
L1102 EXCELDR35V
R1103 330K[0.25W]
R1104 330K[0.25W]
C1103 $220p
C1102 $220p
R1101 $100[1W]
C1106 $
R1107 0.68[1W]
R1102 10[0.25W]
D1106
N.C.
D2
D1
Isense
VCC
GND
SoftS
FB
IC1101
C1108 0.22[KB]
C1107 35V33[RJF]
LB1217
LB1218
C1123
C1124
Q1200
C1109 50V0.01[KB]
R1206 270
K1363
K1361
K1364
B1
B2
P1
PT
P2
S4
SA
S5
S3
S1
S2
S6
S7
S8
S9
D1230
D1290
C1290 25V220[FM]
C1230 50V22[FM]
L1290
C1291 25V100[HG]
R1290 10K
K1362 $
D1250
L1250
C1250 25V470[FM]
K1240
IP1240 $
D1240
L1240
C1240 10V680[FM]
C1241 10V220[HG]
R1240 $
C1251 25V100[HG]
Q1341
R1345 0
R1348 $
Q1343 $
C1340 6V220[KA]
C1320 6V220[KA]
C1261 10V220[M]
R1327 100
R1347 100
D1260
L1260
C1260 10V1200[FM]
R1208 56K[2%]
R1207 8200[2%]
IC1340
C1341 0.1
R1340 0
R1343 2000[2%]
R1344 1200[2%]
C1270 50V22[FM]
D1270
C1220 10V470[FM]
C1221 10V220[HG]
D1220
IP1220
L1220
Q1321
Q1322
R1325 1
R1333 1
R1334 1
R1326 1
R1335 1
R1336 1
K1280
IP1280 $
C1280 10V470[FM]
D1280
R1205 2200
C1200 0.1
IC1200
R1204 1K
R1201 33K[2%]
R1200 33K[2%]
R1203 22K[2%]
R1202 2200[2%]
IC1320
R1320 820
R1323 0
C1321 0.1
R1329 0
IC1390
Vin
On/Off
Vout
Vadj
GND
C1390 16V220[M]
R1390 2200
IP1360 $
K1360
Q1360
C1364 0.01
R1360 470[0.25W]
D1360
C1362 10V47[KA]
C1360 6V220[KA]
PS1302
1 GND_A
2 A5V/D5V
3 GND_D
4 D3.3V
5 GND_D
6 D1.2V
7 GND_D
8 M9V
9 GND_M
PS1301
1 HE+
2 HE-
3 GND
4 UNREG_36V
5 GND
6 GND_M
7 UNREG-23V
8 GND
9 UNREG_14V
10 UNREG_14V
11 DVD_PON_H
12 UNREG_6V
13 UNREG_6V

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

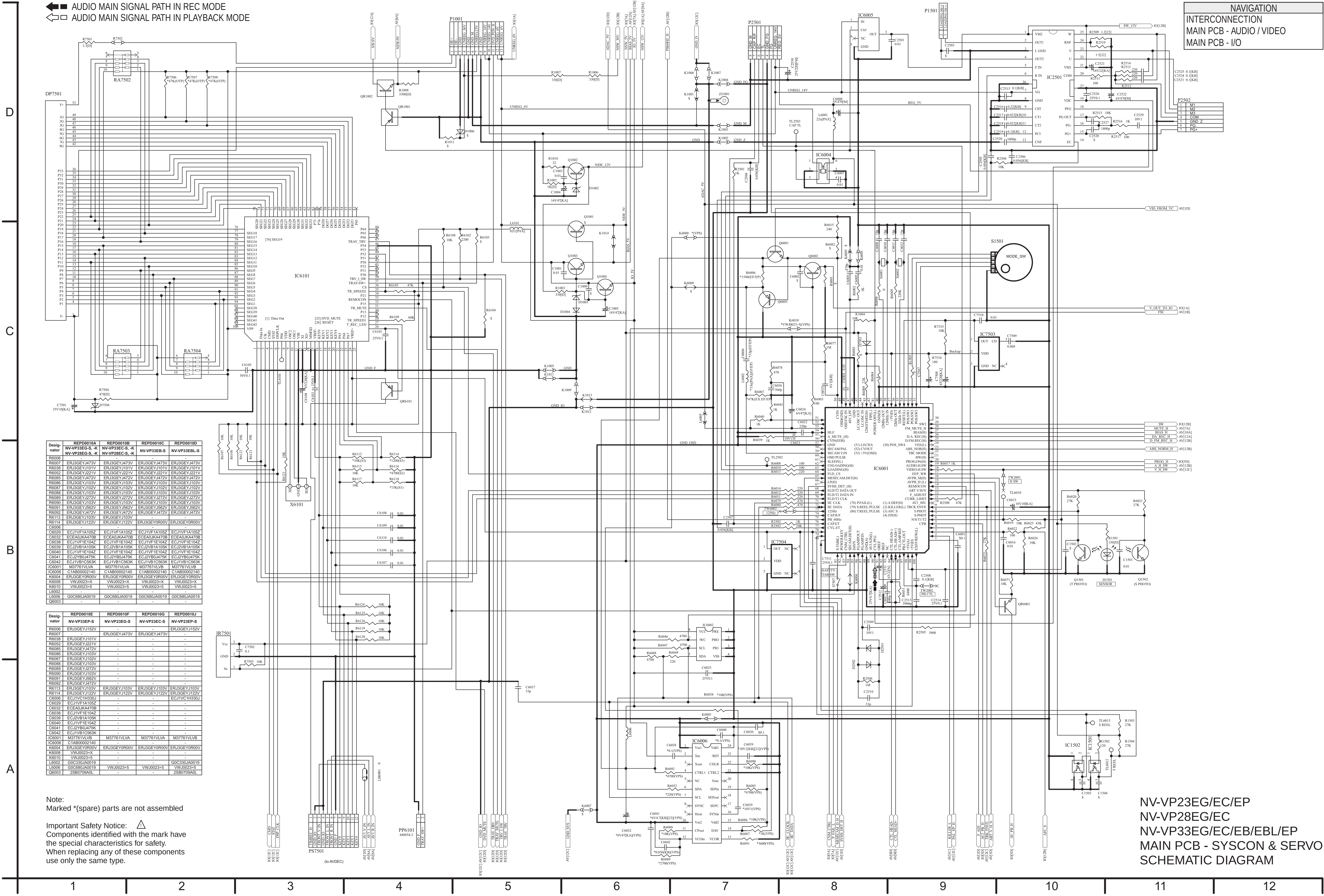
CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
SCHEMATIC DIAGRAM

◀■ AUDIO MAIN SIGNAL PATH IN REC MODE
◁□ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

NAVIGATION
INTERCONNECTION
MAIN PCB - AUDIO / VIDEO
MAIN PCB - I/O


DP7501
RA7502
RA7503
RA7504
IC6101
X6101
IR7501
PS7501
(to AVDEC)
PP6101
P1001
QR1002
QR1001
Q1002
Q1001
Q1003
Q1004
D1004
P2501
IC6005
ZJ1001
TL2503
CAP TL
IC6004
P1501
IC2501
P2502
Q6001
Q6002
Q6003
S1501
MODE_SW
IC7503
IC6001
IC7504
SAFETY TAB SW
IC6002
IC6006
QR6001
Q1501
(T PHOTO)
D1501
SENSOR
Q1502
(S PHOTO)
IC1502
IC1501
TL6013
S REEL
TL6012
T REEL
UNREG_6V
UNREG_14V
REG_5V
NSW_12V
GND_M
GND_Z
GND_FG
GND_IO
GND_OSD
GND_F
VID_FROM_YC
V_OUT_TO_IO
FSC
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D

Desig-nator	REPD0010A NV-VP33EG-S, -K NV-VP28EG-S, -K	REPD0010B NV-VP33EC-S, -K NV-VP28EC-S, -K	REPD0010C NV-VP33EB-S	REPD0010D NV-VP33EBL-S
R6006	-	-	-	-
R6007	ERJ3GEYJ473V	ERJ3GEYJ473V	ERJ3GEYJ473V	ERJ3GEYJ473V
R6038	ERJ3GEYJ101V	ERJ3GEYJ101V	ERJ3GEYJ101V	ERJ3GEYJ101V
R6052	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V	ERJ3GEYJ221V
R6085	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V
R6086	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6087	ERJ3GEYJ102V	ERJ3GEYJ102V	ERJ3GEYJ102V	ERJ3GEYJ102V
R6088	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6089	ERJ3GEYJ272V	ERJ3GEYJ272V	ERJ3GEYJ272V	ERJ3GEYJ272V
R6090	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6091	ERJ3GEYJ562V	ERJ3GEYJ562V	ERJ3GEYJ562V	ERJ3GEYJ562V
R6092	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V	ERJ3GEYJ472V
R6113	ERJ3GEYJ103V	ERJ3GEYJ103V	-	-
R6114	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEY0R00V	ERJ3GEY0R00V
C6006	-	-	-	-
C6029	ECJ1VF1A105Z	ECJ1VF1A105Z	ECJ1VF1A105Z	ECJ1VF1A105Z
C6032	ECEA0JKA470B	ECEA0JKA470B	ECEA0JKA470B	ECEA0JKA470B
C6038	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C6039	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K	ECJ2VB1A105K
C6040	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z	ECJ1VF1E104Z
C6041	ECJ2YB0J475K	ECJ2YB0J475K	ECJ2YB0J475K	ECJ2YB0J475K
C6042	ECJ1VB1C563K	ECJ1VB1C563K	ECJ1VB1C563K	ECJ1VB1C563K
IC6001	M37761VLVA	M37761VLVA	M37761VLVB	M37761VLVB
IC6006	C1AB00002140	C1AB00002140	C1AB00002140	C1AB00002140
K6004	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K6008	VWJ0023=X	VWJ0023=X	VWJ0023=X	VWJ0023=X
K6010	VWJ0023=5	VWJ0023=5	VWJ0023=5	VWJ0023=5
L6002	-	-	-	-
L6006	G0C680JA0019	G0C680JA0019	G0C680JA0019	G0C680JA0019
Q6003	-	-	-	-

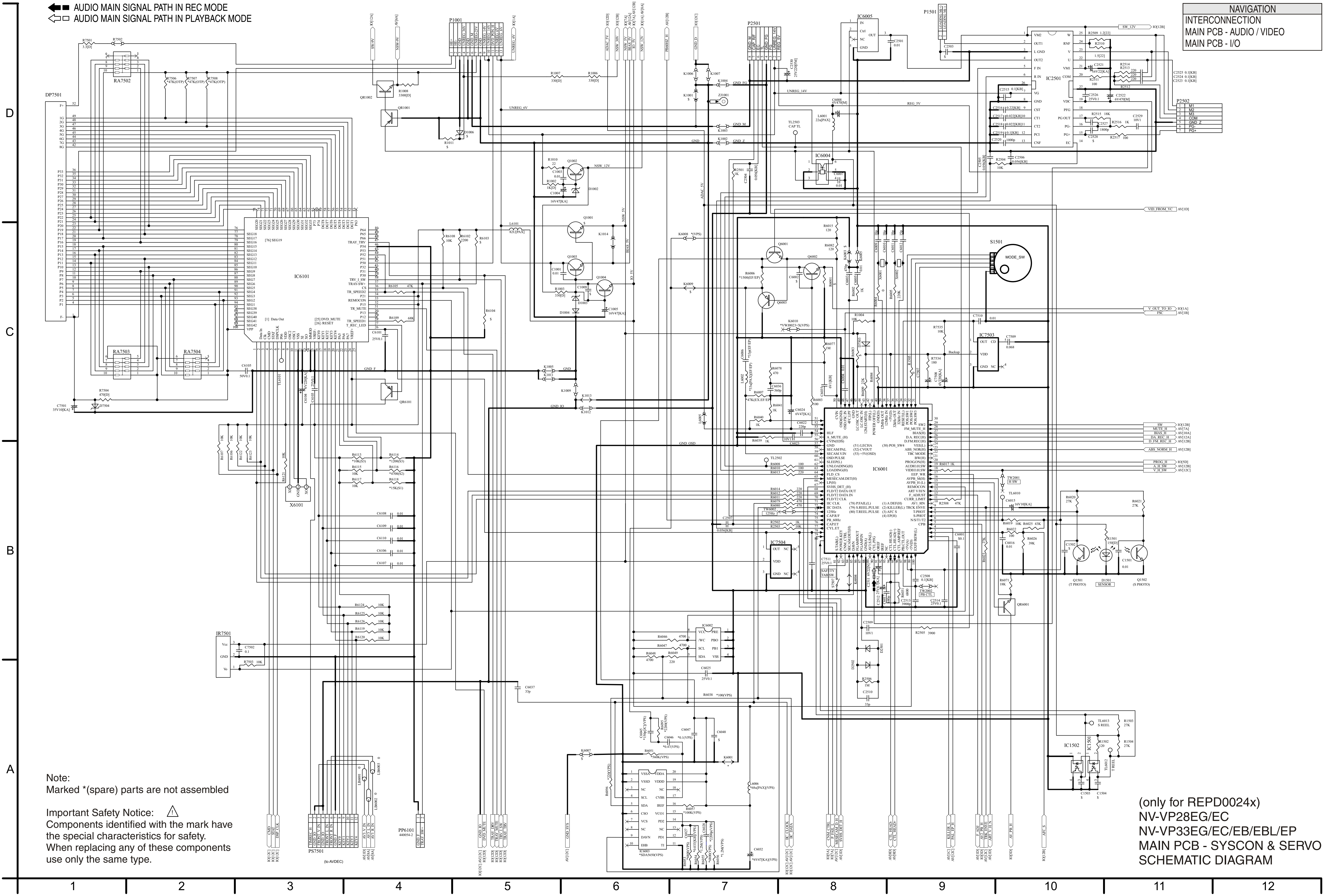
Desig-nator	REPD0010E NV-VP33EP-S	REPD0010F NV-VP23EG-S	REPD0010G NV-VP23EC-S	REPD0010J NV-VP23EP-S
R6006	ERJ3GEYJ152V	-	-	ERJ3GEYJ152V
R6007	-	ERJ3GEYJ473V	ERJ3GEYJ473V	-
R6038	ERJ3GEYJ101V	-	-	-
R6052	ERJ3GEYJ221V	-	-	-
R6085	ERJ3GEYJ472V	-	-	-
R6086	ERJ3GEYJ103V	-	-	-
R6087	ERJ3GEYJ102V	-	-	-
R6088	ERJ3GEYJ103V	-	-	-
R6089	ERJ3GEYJ272V	-	-	-
R6090	ERJ3GEYJ103V	-	-	-
R6091	ERJ3GEYJ562V	-	-	-
R6092	ERJ3GEYJ472V	-	-	-
R6113	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V	ERJ3GEYJ103V
R6114	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEYJ122V	ERJ3GEYJ122V
C6006	ECJ1VC1H330J	-	-	ECJ1VC1H330J
C6029	ECJ1VF1A105Z	-	-	-
C6032	ECEA0JKA470B	-	-	-
C6038	ECJ1VF1E104Z	-	-	-
C6039	ECJ2VB1A105K	-	-	-
C6040	ECJ1VF1E104Z	-	-	-
C6041	ECJ2YB0J475K	-	-	-
C6042	ECJ1VB1C563K	-	-	-
IC6001	M37761VLVB	M37761VLVA	M37761VLVA	M37761VLVB
IC6006	C1AB00002140	-	-	-
K6004	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V	ERJ3GEY0R00V
K6008	VWJ0023=X	-	-	-
K6010	VWJ0023=5	-	-	-
L6002	G0C330JA0019	-	-	G0C330JA0019
L6006	G0C680JA0019	VWJ0023=5	VWJ0023=5	VWJ0023=5
Q6003	2SB0709A0L	-	-	2SB0709A0L

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - SYSCON & SERVO
SCHEMATIC DIAGRAM

NAVIGATION
INTERCONNECTION
MAIN PCB - AUDIO / VIDEO
MAIN PCB - I/O



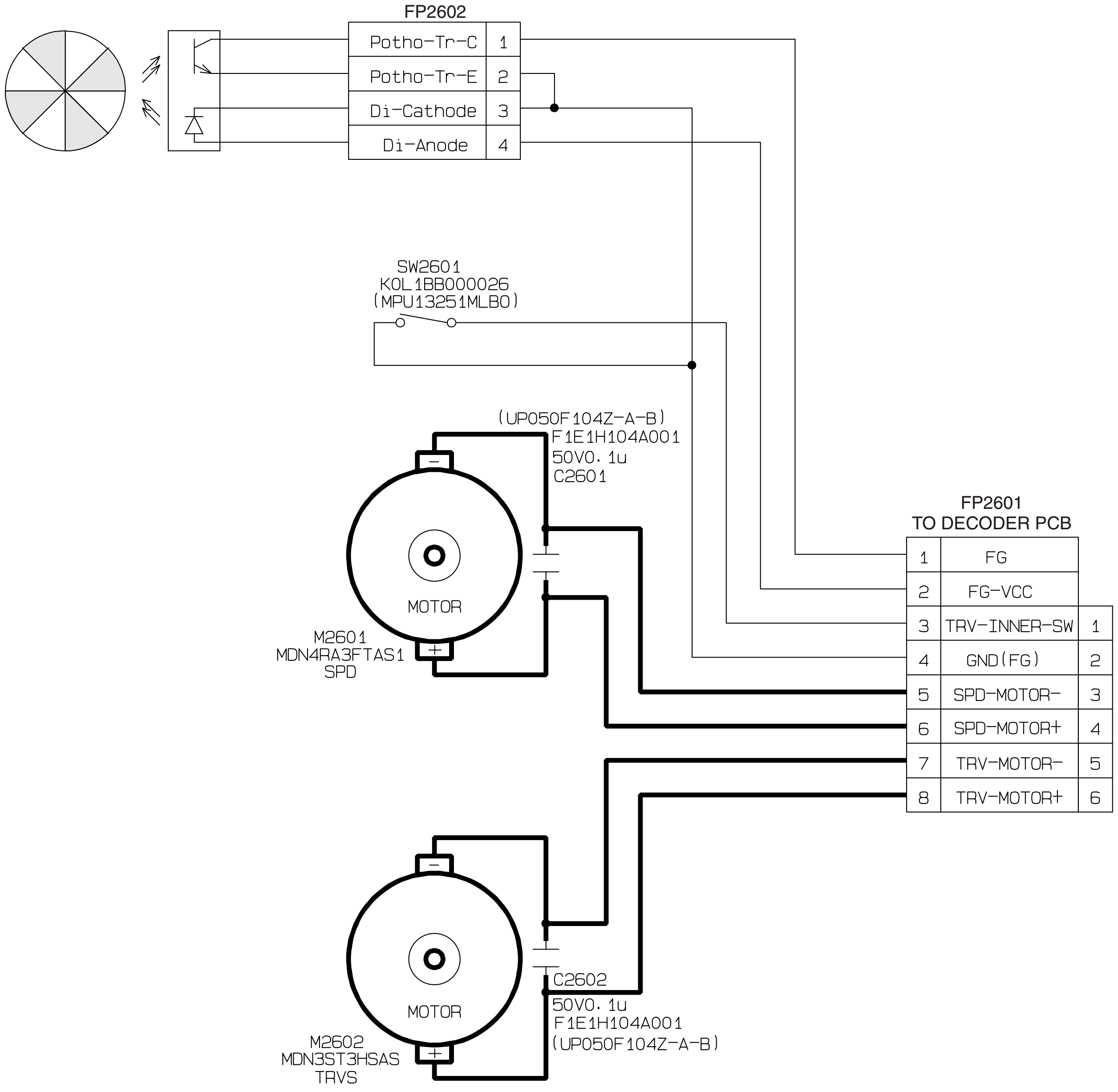
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
DP7501
RA7502
RA7503
RA7504
IC6101
X6101
IR7501
PS7501
(to AVDEC)
PP6101
P1001
P2501
IC6005
P1501
IC2501
P2502
IC6004
IC6001
S1501
MODE_SW
IC7503
IC7504
IC6002
IC6003
IC1502
IC1501
Q1501
(T PHOTO)
D1501
SENSOR
Q1502
(S PHOTO)
QR6001
QR6101
QR1001
QR1002
Q1001
Q1002
Q1003
Q1004
Q6001
Q6002
Q6003
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.

(only for REPD0024x)
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB - SYSCON & SERVO
SCHEMATIC DIAGRAM

NAVIGATION
INTERCONNECTION


FP2602
Potho-Tr-C 1
Potho-Tr-E 2
Di-Cathode 3
Di-Anode 4
SW2601
K0L1BB000026
(MPU13251MLB0)
(UP050F104Z-A-B)
F1E1H104A001
50V0.1u
C2601
MOTOR
M2601
MDN4RA3FTAS1
SPD
FP2601
TO DECODER PCB
1 FG
2 FG-VCC
3 TRV-INNER-SW 1
4 GND(FG) 2
5 SPD-MOTOR- 3
6 SPD-MOTOR+ 4
7 TRV-MOTOR- 5
8 TRV-MOTOR+ 6
MOTOR
M2602
MDN3ST3HSAS
TRVS
C2602
50V0.1u
F1E1H104A001
(UP050F104Z-A-B)

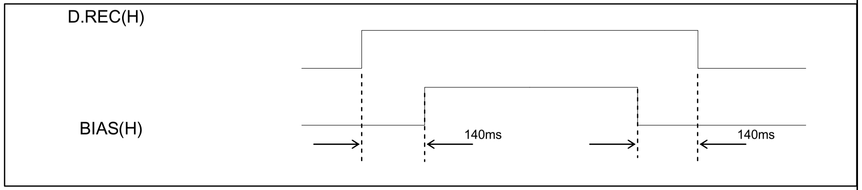
Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have
the special characteristics for safety.
When replacing any of these components
use only the same type.

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
TERMINAL PCB
SCHEMATIC DIAGRAM

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset
1	A.DEF(H)	O	Output signal for audio defea and decoder IC reset	Low	Low	Low	Low
2	CKILLER DET(L)	I	COLOR KILLER Detection of COLOR KILLER active	In	In	In	In
3	AFC S	I	S curve input from tuner	In	In	In	In
4	SLP(H)	O	Output signal depens on tape spee During N10H or P9H: High Except N10H and P9H: Low	Low	Low	Low	Low
5	CPB	I	PB input from AV2 · 3.21v ~ : High · 1.23v ~ 3.21v : Middle · ~ 1.23v : Low	In	In	In	In
6	N/S/T2	I	Normal/Service/Test2 select · 4.0v~ : NORMAL mode · 2.5v~ 4.0v : SERVICE mode · 1.0v~ 2.5v : TEST2 mode · 0v~ 1.0v : No define (spare)	In	In	In	In
7	S-PHOTO	I	Photo sensor input from supply side more than 2.6V: black / less than 2.4V: white	In	In	In	In
8	T-PHOTO	I	Photo sensor input from take up side more than 2.6V: black / less than 2.4V: white	In	In	In	In
9	TRACKING_ENVE	I	Video envelope input for auto tracking and CVC	In	In	In	In
10	AV1_8IN	I	Not connected	In	In	In	In
11	CURRENT_LIMIT	O	Current limit for capstan driver	In DA=0V	In DA=0V	Low	In DA=0V
12	F ADJUST	O	Analogue voltage output for HEAD frequency response adjustment	In DA=0V	In DA=0V	Low	In DA=0V
13	ART.V/H/N	O	Artificial V synchronization signal	Low	Low	Low	Low
14	IR	I	Interrupt input from IR sensor	In	In	In	In
15	AVPB-H(L)	O	Output signal for AV2-PB	High	High	Low	High
16	AVPB-M(H)	O		Low	Low	Low	Low

pin8 \ setup	AVPB-H(L)	AVPBM-
High	L	Hi-Z
Middle	H	Hi-Z
Low	H	L

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset
17	EEP_WR	O	Write enable for EEPROM H:READ only L:Write	High	High	Low	High
18	VIDEO.H.SW	O	Output signal for video HEAD switch NTSC: 11122µs, PAL: 13333µs	Low	Low	Low	Low
19	A.H.SW	O	Output signal for FM audio HEAD switch	Low	Low	Low	Low
20	PROG ON(H)	O	H: IIC bus is connected to AV2 L: IIC bus is not connected to AV2	Low	Low	Low	Low
21	B/W(H)	O	Output signal for B/W mode	Low	Low	Low	Low
22	TBC MODE0	O	Not connected	Low	Low	Low	Low
23	ABS_NORM(H)	I	Input signal for FM audio enverope level detection	In	In	In	In
24	V EE(L)	O	Output signal for switch between EE and VV	Low	Low	Low	Low
25	D.FM.REC(H)	O	Control signal for FM audio recording current	Low	Low	Low	Low
26	D.A.REC(H)	O	Control signal for normal audio recording current	Low	Low	Low	Low
27	BIAS(H)	O	Control signal for FM audio recording current 	Low	Low	Low	Low
28	FM.MUTE(H)	O	Output signal for audio mute control	High	High	Low	High
29	PAL-I/BG/DK(SYS4)	O	Output terminal for broad cast system to control the video circuit	Low	Low	Low	Low
30	POS.SW4	I/O	Input signal for mecha position	In	In	In	In
31	POS.SW3	I/O		In	In	In	In
32	POS.SW2	I/O		In	In	In	In
33	POS.SW1	I/O		In	In	In	In
34	RESET(L)	I	Input signal for ucon reset	In	In	In	In
35	32KHz IN	I	Sub oscillator input	---	---	---	---
36	32KHz OUT	O	Sub oscillator output	---	---	---	---

POS.SW1	POS.SW2	POS.SW3	POS.SW4	Position
0	0	0	0	
0	0	0	1	
0	0	1	0	DOWN
0	0	1	1	R-REW
0	1	0	0	LOAD
0	1	0	1	REV
0	1	1	0	PLAY
0	1	1	1	POFF
1	0	0	0	STOP_R
1	0	0	1	STOP_F
1	0	1	0	
1	0	1	1	
1	1	0	0	FF/REW
1	1	0	1	
1	1	1	0	EJECT
1	1	1	1	

<table>
<tr><th>Pin.No.</th><th>Signal Name</th><th>I/O</th><th>Describe</th><th>P-OFF</th><th>P-SAVE</th><th>P-FAIL</th><th>Reset</th></tr>
<tr><td>37</td><td>+5V(D)</td><td>-</td><td>Vcc(5V)</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>38</td><td>12MHz.IN</td><td>I</td><td>Main oscillator input</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>39</td><td>12MHz.OUT</td><td>O</td><td>Main oscillator output</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>40</td><td>GND(D)</td><td>-</td><td>G N D</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>41</td><td>POWER OFF(L)</td><td>O</td><td>Control signal for power circuit</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>42</td><td>FIP ON(L)</td><td>O</td><td>Not connected</td><td>Low</td><td>High</td><td>Low</td><td>Low</td></tr>
<tr><td>43</td><td>12M.START(H)</td><td>I</td><td>Starting clock select terminal at releasing RESET</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>44</td><td>NC</td><td>I</td><td>Non connect</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>45</td><td>624/628</td><td>O</td><td>Detect PAL OSD scanning line 624 or 628 by Input Voltage. (For Service)
(The permanent countermeasure for the complaint that the problem of V dancing with HongKong TV.)
<table>
<tr><th>ucon PIN</th><th>Option code</th><th>Result</th><th></th></tr>
<tr><td>5V</td><td>628</td><td>628 Odd</td><td><- Initial setting</td></tr>
<tr><td>5V</td><td>624</td><td>624 Even</td><td></td></tr>
<tr><td>0V</td><td>624</td><td>624 Even</td><td></td></tr>
<tr><td>0V</td><td>628</td><td>624 Even</td><td></td></tr>
</table></td><td>In</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>46</td><td>GND</td><td>I</td><td>GND</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>47</td><td>4FC.LPF</td><td>I</td><td>NC</td><td>---</td><td>---</td><td>---</td><td>Low</td></tr>
<tr><td>48</td><td>OSD.FSC IN</td><td>I</td><td>NC</td><td>---</td><td>---</td><td>---</td><td>Low</td></tr>
<tr><td>49</td><td>GND(OSD)</td><td>-</td><td>GND</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>50</td><td>CVIN</td><td>I</td><td>Input signal of composite video</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>51</td><td>LECHA</td><td>I</td><td>Input signal for white level of composite video</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>52</td><td>CVOUT</td><td>O</td><td>Output signal for character generator</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>53</td><td>5V(OSD)</td><td>-</td><td>5V</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>54</td><td>HLF</td><td>I</td><td>For slicer IC</td><td>---</td><td>---</td><td>---</td><td>Low</td></tr>
<tr><td>55</td><td>AMUTE(H)</td><td>O</td><td>Not connected</td><td>High</td><td>High</td><td>Low</td><td>High</td></tr>
<tr><td>56</td><td>CVIN(EDS)</td><td>I</td><td>Input signal of composite video for Slicer IC</td><td>In</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>57</td><td>GND</td><td>I</td><td>GND</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>58</td><td>SECAM/PAL(SYS2)</td><td>O</td><td>Output signal for Video system control</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>59</td><td>SECAM.V.IN
AD.V</td><td>I</td><td>AD.V (TBC function is exist. It decide by Option code)
Input Vsync signal from TBC IC

SECAM.V.IN (TBC function is not exist. It decide by Option code)
Input C signal for SECAM superimpose</td><td>Depend on table</td><td>Low</td><td>Low</td><td>In</td></tr>
<tr><td>60</td><td>OSD PULSE</td><td>O</td><td>Not connected</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>61</td><td>SLEEP(L)</td><td>O</td><td>Not connected</td><td>High</td><td>Low</td><td>Low</td><td>High</td></tr>
<tr><td>62</td><td>UNLOADING(H)</td><td>O</td><td>Control signal for Loading motor forward</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>63</td><td>LOADING(H)</td><td>O</td><td>Control signal for Loading motor reverse</td><td>Low</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>64</td><td>FLD CS</td><td>O</td><td>FLD</td><td>Not fix</td><td>Not fix</td><td>Low</td><td>Low</td></tr>
</table>

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset
65	MESECAM DET(H)	I	MESECAM/NORMAL Detection between MESECAM and NORMAL	In	In	In	In
66	LP(H)	O	Not connected	Low	Low	Low	Low
67	S-VHS DET(H)	O	SVHS/V H S Detection between SVHS and V H S	In	In	In	In
68	FLD DATA OUT	O	FIP Serial data output signal for FIP driver	Not fix	Not fix	Low	Low
69	FLD DATA IN	I	FIP Serial data input signal for FIP driver	Not fix	Not fix	In	In
70	FLD CLK	O	FIP Serial clock signal for FIP driver	Not fix	Not fix	Low	Low
71	IIC CLK	O	IIC clock for all IIC devices	Not fix	Not fix	Low	Low
72	IIC DATA	O	IIC data for all IIC devices	Not fix	Not fix	Low	Low
73	125Hz	O	TEST2 125Hz output for adjustment of clock accuracy	Low	Low	Low	Low
74	CAP.R/F	O	Control signal for capstan motor diriction	Low	Low	Low	Low
75	PB60Hz	O	Switch trap for HiFi audio in case of NTSC PB (60Hz)	Low	Low	Low	Low
76	CAP.ET	I/O	Torque control signal for capstan motor	0V	0V	Low	0V
77	CYL.ET	I/O	Torque control signal for cylinder motor Cylinder OFF : 5.000V	Low PWM=5.000V	Low PWM=5.000V	Low	Low PWM=5.000V
78	P FAIL	I/O	Interrupt input signal for power fail detection	In	In	In	In
79	S.REEL.PULSE	I/O	Input signal from supply reel sensor	In	In	In	In
80	T.REEL.PULSE	I/O	Input signal from take up reel sensor	In	In	In	In
81	S TAB(L)	I	Input signal from frase prevention tab · exist: Low no exist:High PULL UP R use input pull-up resistor.	In	In	In	In
82	POWER_KEY	I/O	Not connected	In	In	In	In
83	CNR OFF(H)	I/O	Not connected	Low	Low	Low	Low
84	SECAM_ID(H)	I/O	SECAM Detection of SECAM mode	In	In	In	In
85	DAVN	I/O	DAVN signal from Slicer	In	In	In	In
86	FG.AMP.OUT	I/O	Output from internal FG Amplifier	---	---	---	---
87	FG.AMP.IN	I	Input for internal FG Amplifier	---	---	---	---
88	GND(A)	I	GND	---	---	---	---
89	AV3_S_IN(L)	I/O	Not connected	In	In	In	In
90	PFG	I	PFG input terminal	---	---	---	---
91	OREF	O	Output from internal reference voltage (2.5V)	---	---	---	---
92	IREF	I	Input for internal reference voltage	---	---	---	---
93	SCAS_IN(L)	I/O	Not connected	In	In	In	In
94	CTL.HEAD(-)	I/O	Input signal from CTL HEAD(+)	---	---	---	---
95	CTL.HEAD(+)	I/O	Input signal from CTL HEAD(-)	---	---	---	---
96	CTL.AMP.REF	I	Input for internal CTL amplifier reference voltage	---	---	---	---
97	PB.CTL.OUT	I/O	Output from internal CLT amplifier	---	---	---	---
98	+5V(A)	I	+5V (A)	---	---	---	---
99	+5V(AD)	I	+5V (AD)	---	---	---	---
100	EX.FF/REW(L)	I/O	FF/REW Filter switch signal for PB-CTL	Low	Low	Low	Low

INPUT CONDITION							Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / pro-grammed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
OFF	---	---	---	---	---	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
						M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
VPS STAND BY or EXT LINK STAND BY	---	VCR	L	---	NO.TU	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
						M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
					AV1	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV2IN	AV1IN	REC	AV1in (001)	BSmon	AV1in	L
						M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV1(010)	CH2	AV1	AV2IN	AV1IN	REC	AV1in (001)	BSmon	AV1in	L
					AV2	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
						M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
					AV3	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
						M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
			H	---	NO.TU	L	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	Mute	Mute	REC	TUN (000)	Hifi,Mix,Nor	AV1in	H
					AV1	L	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	Mute	Mute	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	H
					AV2	L	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	Mute	Mute	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	H
					AV3	L	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	MUTE	CH3	AV3	Mute	Mute	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	H
		DVD	---	OFF	NO.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
				ON	NO.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
						M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
P.ON	EE	VCR	L	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
					AV1	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
					AV2	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
					AV3	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
					DVD	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
			H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
					AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
					AV2	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
					AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
					DVD	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
	VV	VCR	L	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
					AV1	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
					AV2	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
					AV3	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH3	PB	PB VHS	PB VHS	PB VHS	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
					DVD	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
			H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
					AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
					AV2	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
					AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	PB	PB VHS	PB VHS	PB VHS	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
					DVD	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	DVD (100)	Hifi,Mix,Nor	OUTSEL	L

INPUT CONDITION							Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / programmed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
	EE	DVD	---	OFF	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
					DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Nor (10)	DVD(EXT4)	L
				ON	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
					DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Nor (10)	DVD(EXT4)	L
	VV	DVD	---	OFF	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH3	PB	DVD	DVD	PB VHS	AV3in (011)	Nor (10)	DVD(EXT4)	L
					DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	DVD (100)	Nor (10)	DVD(EXT4)	L
				ON	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
					AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV1in (001)	Nor (10)	DVD(EXT4)	L
					AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV2in (010)	Nor (10)	DVD(EXT4)	L
					AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH3	PB	DVD	DVD	PB VHS	AV3in (011)	Nor (10)	DVD(EXT4)	L
					DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	DVD (100)	Nor (10)	DVD(EXT4)	L

INPUT CONDITION									Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	AV2	TV/	EE/	DVD/VCR	OSD	DVD	INPUT- / pro- grammed	AV2	AV1	AV2	AV1	AV2	RGB	DVD/AV2	Video to YC	YC INPUT	YC-out	AV1	AV2	REC/	Input	AV1 output	AV2 output	Mute
	SELECT	VTR	VV	MODE	ON(H)	RGB	CH	PB(H)	OUT	OUT	PB(H)	PB(H)	SW	SELECT			OUT	Out	Out	PB	Select	Select	Select	(H)
	Function menu	AV link				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
OFF	---	---	---	---	---	---	---	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
VPS STAND BY or EXT LINK STAND BY	EXT or EXT LINK 1 or EXT LINK 2	---	---	VCR	L	---	NO.TU	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
							C+.TU	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
							AV1	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV2IN	AV1IN	REC	AV1in (001)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV1(010)	CH2	AV1	AV2IN	AV1IN	REC	AV1in (001)	BSmon	AV1in	L
							AV2	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
							AV3	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
					H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	Mute	Mute	REC	TUN (000)	Hifi,Mix,Nor	AV1in	H
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	Mute	Mute	REC	TUN (000)	Hifi,Mix,Nor	AV1in	H
							AV1	---	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	Mute	Mute	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	H
							AV2	---	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	Mute	Mute	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	H
							AV3	---	VCR OUT(1-)	VCR OUT(00)	H	H	OFF(1)	H (AV2)	MUTE	CH3	AV3	Mute	Mute	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	H
				DVD	---	OFF	NO.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
						ON	NO.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	L	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
								M/H	DVD OUT(00)	DVD OUT(11)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
	DECODER	---	---	VCR	L	---	NO.TU	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
							C+.TU	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
							AV1	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV2IN	AV1IN	REC	AV1in (001)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
							AV2	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
							AV3	L	AV2 IN(01)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L

INPUT CONDITION									Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	AV2 SELECT	TV/ VTR	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / pro-grammed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
	Function menu	AV link				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
					H	---	NO.TU	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	Mute	Mute	REC	TUN (000)	Hifi,Mix,Nor	AV1in	H
							C+.TU	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	Mute	Mute	REC	TUN (000)	Hifi,Mix,Nor	AV1in	H
							AV1	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	Mute	Mute	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	H
								M/H	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	Mute	Mute	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	H
							AV2	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	Mute	Mute	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	H
							AV3	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	Mute	Mute	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	H
				DVD	---	OFF	NO.TU	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							C+.TU	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							AV1	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
								M/H	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
							AV2	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV3	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	AV1IN	REC	AV3in (011)	Nor (10)	AV1in	L
						ON	NO.TU	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							C+.TU	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							AV1	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
								M/H	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
							AV2	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV3	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	AV1IN	REC	AV3in (011)	Nor (10)	AV1in	L
P.ON	EXT or EXTLINK1 or EXTLINK2	TV	EE	VCR	L	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
							DVD	---	VCR OUT(1-)	VCR OUT(00)	L	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
					H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
							DVD	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
		VTR	EE	VCR	L	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	L	VCR OUT(1-)	VCR OUT(00)	H	H	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
								M/H	VCR OUT(1-)	VCR OUT(00)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
						OFF	DVD	---	VCR OUT(1-)	VCR OUT(00)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
					NO	ON	DVD	---	VCR OUT(1-)	VCR OUT(00)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
					ANY		DVD	---	VCR OUT(1-)	VCR OUT(00)	H(1)	*2[H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
					H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV2IN	REC	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV3IN	REC	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
							DVD	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
			VV	VCR	L	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH3	PB	PB VHS	PB VHS	PB VHS	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
							DVD	---	VCR OUT(1-)	VCR OUT(00)	*6[M/H]	*3[M/H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	DVD (100)	Hifi,Mix,Nor	OUTSEL	L

INPUT CONDITION									Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	AV2 SELECT	TV/ VTR	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / pro- grammed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
	Function menu	AV link				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
					H	---	NO.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							C+.TU	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB VHS	PB VHS	PB VHS	TUN (000)	Hifi,Mix,Nor	OUTSEL	L
							AV1	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV1in (001)	Hifi,Mix,Nor	OUTSEL	L
							AV2	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	AV2in (010)	Hifi,Mix,Nor	OUTSEL	L
							AV3	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH3	PB	PB VHS	PB VHS	PB VHS	AV3in (011)	Hifi,Mix,Nor	OUTSEL	L
							DVD	---	VCR OUT(1-)	VCR OUT(00)	H	*2[H]	OFF(1)	H (AV2)	MUTE	CH2	PB	PB VHS	PB VHS	PB VHS	DVD (100)	Hifi,Mix,Nor	OUTSEL	L
		---	EE	DVD	---	OFF	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
							DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Nor (10)	DVD(EXT4)	L
						ON	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	DVD	REC	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	DVD	REC	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*4	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	DVD	REC	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	DVD	REC	AV3in (011)	Nor (10)	DVD(EXT4)	L
							DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	DVD(000)	CH2	DVD	DVD	DVD	REC	DVD (100)	Nor (10)	DVD(EXT4)	L
		---	VV	DVD	---	OFF	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH3	PB	DVD	DVD	PB VHS	AV3in (011)	Nor (10)	DVD(EXT4)	L
							DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	DVD (100)	Nor (10)	DVD(EXT4)	L
						ON	NO.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
							C+.TU	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH1/CH2	PB	DVD	DVD	PB VHS	TUN (000)	Nor (10)	DVD(EXT4)	L
							AV1	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV1in (001)	Nor (10)	DVD(EXT4)	L
							AV2	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	AV2in (010)	Nor (10)	DVD(EXT4)	L
							AV3	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH3	PB	DVD	DVD	PB VHS	AV3in (011)	Nor (10)	DVD(EXT4)	L
							DVD	---	DVD OUT(00)	DVD OUT(11)	*5[M/H]	*5[M/H]	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	DVD	PB VHS	DVD (100)	Nor (10)	DVD(EXT4)	L
P.ON	DECODER	TV	EE	VCR	L	---	NO.TU	L	VCR OUT(1-)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	AV1IN	REC	TUN (000)	Hifi,Mix,Nor	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	TUN(001)	CH1/CH2	TUN	AV2IN	AV1IN	REC	TUN (000)	BSmon	AV1in	L
							C+.TU	L	VCR OUT(1-)	TUN IN(10)	L	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	TUN	L
								M/H	VCR OUT(1-)	TUN IN(10)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	TUN	REC	AV2in (010)	Hifi,Mix,Nor	TUN	L
							AV1	L	VCR OUT(1-)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
							AV2	L	VCR OUT(1-)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	BSmon	AV1in	L
							AV3	L	VCR OUT(1-)	AV1 IN(01)	L	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV1IN	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	MUTE	CH3	AV3	AV2IN	AV1IN	REC	AV3in (011)	BSmon	AV1in	L
							DVD	L	VCR OUT(1-)	AV1 IN(01)	L	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L
								M/H	AV2 IN(01)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	DVD(000)	CH2	DVD	AV2IN	AV1IN	REC	DVD (100)	BSmon	AV1in	L
					H	---	NO.TU	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	AV1IN	REC	TUN (000)	Hifi,Mix,Nor	AV1in	L
							C+.TU	L	VCR OUT(1-)	TUN IN(10)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	TUN	L
								M/H	VCR OUT(1-)	TUN IN(10)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	TUN	REC	AV2in (010)	Hifi,Mix,Nor	TUN	L
							AV1	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	L
								M/H	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV2	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV3	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV1IN	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	L
							DVD	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L

INPUT CONDITION									Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	AV2 SELECT	TV/ VTR	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / pro- grammed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
	Function menu	AV link				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
		VTR	EE	VCR	L	---	NO.TU	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	AV1IN	REC	TUN (000)	Hifi,Mix,Nor	AV1in	L
							C+.TU	L	VCR OUT(1-)	TUN IN(10)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	TUN	L
								M/H	VCR OUT(1-)	TUN IN(10)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	TUN	REC	AV2in (010)	Hifi,Mix,Nor	TUN	L
							AV1	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	L
								M/H	VCR OUT(1-)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV2	L	VCR OUT(1-)	AV1 IN(01)	H	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
								M/H	VCR OUT(1-)	AV1 IN(01)	*7[M/H]	L	ON(0)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV3	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV1IN	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	L
								M/H	VCR OUT(1-)	AV1 IN(01)	*7[M/H]	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV1IN	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	L
						OFF	DVD	---	VCR OUT(1-)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L
					NO	ON		---	VCR OUT(1-)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L
					ANY			---	VCR OUT(1-)	AV1 IN(01)	H(1)	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L
					H	---	NO.TU	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	AV1IN	REC	TUN (000)	Hifi,Mix,Nor	AV1in	L
							C+.TU	L	VCR OUT(1-)	TUN IN(10)	H	L	OFF(1)	H (AV2)	TUN(001)	CH1/CH2	TUN	TUN	TUN	REC	TUN (000)	Hifi,Mix,Nor	TUN	L
								M/H	VCR OUT(1-)	TUN IN(10)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	TUN	REC	AV2in (010)	Hifi,Mix,Nor	TUN	L
							AV1	L	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV1(010)	CH2	AV1	AV1IN	AV1IN	REC	AV1in (001)	Hifi,Mix,Nor	AV1in	L
								M/H	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV2	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	AV2(011)	CH2	AV2	AV2IN	AV1IN	REC	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV3	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	H (AV2)	MUTE	CH3	AV3	AV3IN	AV1IN	REC	AV3in (011)	Hifi,Mix,Nor	AV1in	L
							DVD	---	VCR OUT(1-)	AV1 IN(01)	H	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Hifi,Mix,Nor	AV1in	L
			VV	VCR	---	---	NO.TU	---	VCR OUT(1-)	AV1 IN(01)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB	AV1IN	PB VHS	TUN (000)	Hifi,Mix,Nor	AV1in	L
							C+.TU	---	VCR OUT(1-)	TUN IN(10)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH1/CH2	PB	PB	TUN	PB VHS	TUN (000)	Hifi,Mix,Nor	TUN	L
							AV1	---	VCR OUT(1-)	AV1 IN(01)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH2	PB	PB	AV1IN	PB VHS	AV1in (001)	Hifi,Mix,Nor	AV1in	L
							AV2	---	VCR OUT(1-)	AV1 IN(01)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH2	PB	PB	AV1IN	PB VHS	AV2in (010)	Hifi,Mix,Nor	AV1in	L
							AV3	---	VCR OUT(1-)	AV1 IN(01)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH3	PB	PB	AV1IN	PB VHS	AV3in (011)	Hifi,Mix,Nor	AV1in	L
							DVD	---	VCR OUT(1-)	AV1 IN(01)	*6[M/H]	L	OFF(1)	H (AV2)	MUTE	CH2	PB	PB	AV1IN	PB VHS	DVD (100)	Hifi,Mix,Nor	AV1in	L
		---	EE	DVD	---	OFF	NO.TU	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							C+.TU	L	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	OFF(1)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	TUN	REC	TUN (000)	Nor (10)	TUN	L
								M/H	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	TUN	REC	AV2in (010)	Nor (10)	TUN	L
							AV1	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV1(010)	CH2	AV1	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
								M/H	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV2	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV3	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH3	AV3	DVD	AV1IN	REC	AV3in (011)	Nor (10)	AV1in	L
							DVD	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Nor (10)	AV1in	L
						ON	NO.TU	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	AV1IN	REC	TUN (000)	Nor (10)	AV1in	L
							C+.TU	L	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	ON(0)	L (DVD)	TUN(001)	CH1/CH2	TUN	DVD	TUN	REC	TUN (000)	Nor (10)	TUN	L
								M/H	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	TUN	REC	AV2in (010)	Nor (10)	TUN	L
							AV1	L	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV1(010)	CH2	AV1	DVD	AV1IN	REC	AV1in (001)	Nor (10)	AV1in	L
								M/H	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV2	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	AV2(011)	CH2	AV2	DVD	AV1IN	REC	AV2in (010)	Nor (10)	AV1in	L
							AV3	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH3	AV3	DVD	AV1IN	REC	AV3in (011)	Nor (10)	AV1in	L
							DVD	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	DVD(000)	CH2	DVD	DVD	AV1IN	REC	DVD (100)	Nor (10)	AV1in	L
		---	VV	DVD	---	OFF	NO.TU	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH1/CH2	PB	DVD	AV1IN	PB VHS	TUN (000)	Nor (10)	AV1in	L
							C+.TU	---	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH1/CH2	PB	DVD	TUN	PB VHS	TUN (000)	Nor (10)	TUN	L
							AV1	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	AV1in (001)	Nor (10)	AV1in	L
							AV2	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	AV2in (010)	Nor (10)	AV1in	L
							AV3	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH3	PB	DVD	AV1IN	PB VHS	AV3in (011)	Nor (10)	AV1in	L
							DVD	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	OFF(1)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	DVD (100)	Nor (10)	AV1in	L

INPUT CONDITION									Video Output Result LA73021 settings									Audio Output Results		AN3656 settings				Mute signal
POWER	AV2 SELECT	TV/ VTR	EE/ VV	DVD/VCR MODE	OSD ON(H)	DVD RGB	INPUT- / pro-grammed CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	DVD/AV2 SELECT	Video to YC	YC INPUT	YC-out OUT	AV1 Out	AV2 Out	REC/ PB	Input Select	AV1 output Select	AV2 output Select	Mute (H)
	Function menu	AV link				Function menu		AV2-8 in	V-OUTSEL	V-DECSEL	AV1-8	AV2-8 out	RGB OFF(H)	DVD(L)	V-INSEL	YC-INSEL	YC-out			A-REC/PB	A-INSEL	A-OUTSEL	A-DECSEL	
						ON	NO.TU	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH1/CH2	PB	DVD	AV1IN	PB VHS	TUN (000)	Nor (10)	AV1in	L
							C+.TU	---	DVD OUT(00)	TUN IN(10)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH1/CH2	PB	DVD	TUN	PB VHS	TUN (000)	Nor (10)	TUN	L
							AV1	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	AV1in (001)	Nor (10)	AV1in	L
							AV2	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	AV2in (010)	Nor (10)	AV1in	L
							AV3	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH3	PB	DVD	AV1IN	PB VHS	AV3in (011)	Nor (10)	AV1in	L
							DVD	---	DVD OUT(00)	AV1 IN(01)	*5[M/H]	L	ON(0)	L (DVD)	MUTE	CH2	PB	DVD	AV1IN	PB VHS	DVD (100)	Nor (10)	AV1in	L

For your safety please read the following text carefully

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS 1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstance should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

How to replace the Fuse

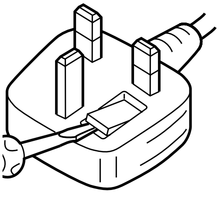
- There are two types of the AC Mains Lead assembly: **A** and **B** as shown below.

1 Open the fuse compartment with a screwdriver.

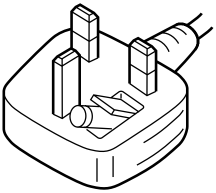
2 Replace the fuse and fuse cover.

TYPE A

1

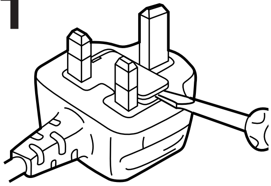


2

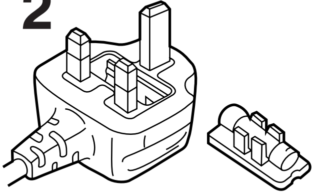


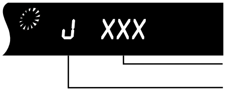
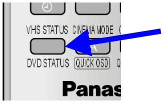
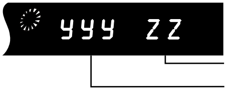
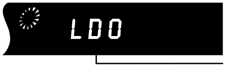
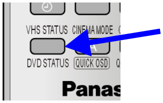
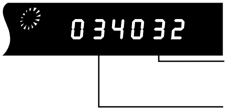
TYPE B

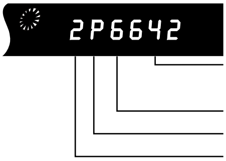
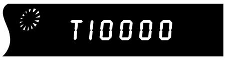
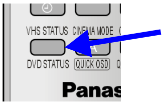
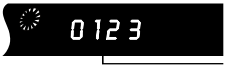
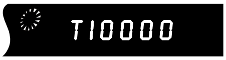
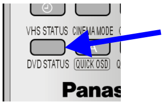
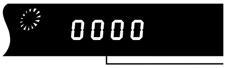
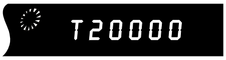
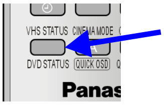
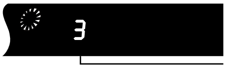
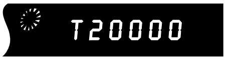
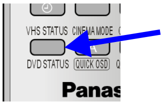
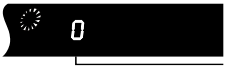
1



2



Item	Player mode and button combination	Function	Display	Cancellation method
Jitter check	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "5" button on the remote control unit.	Jitter check Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be read out, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jump by two or more.	 Display 1 Jitter rate Jitter check mode  Press STATUS Key to select Display 1 or 2  Display 2 Focus drive value Read error counter Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	Press STOP or OPEN button.
Error code check	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and "0" button on the remote control unit.* With pointing of cursor up and down on display, the panel controller switches serial number of history and sends out the command accordingly.	Error code check The latest error code stored in EEPROM is displayed.	Error code (play_err) is expressed in the following convention. Error code = 0 x DAXX is expressed: → nn UXX Error code = 0 x DBXX is expressed: → nn HXX Error code = 0 x DXXX is expressed: → nn FXXX Error code = 0 x 0000 is expressed: → nn F--- * "nn" denotes the serial number of history.	Cancelled automatically 5 seconds later.
Initialsetting of laser drive current	In STOP (no disc) mode, press PLAY (DVD) and OPEN buttons on the player, and PAUSE button on the remote control unit.	Initial setting of laser drive current Initial current value for each of DVD laser and CD laser is separately saved in EEPROM.	 Display 1 Laser current measurement mode  Press STATUS Key to select Display 1 or 2  Display 2 CD laser current measurement DVD laser current measurement The value denotes the current in decimal notation. The above example shows the initial current is 34mA and 28mA for DVD laser and CD laser respectively when the laser is switched on.	Cancelled automatically 5 seconds later.

Item	Player mode and button combination	Function	Display	Cancellation method
Dealer´s lock	In STOP (no disc) mode, press STOP button on the player and POWER button on the remote control unit.	Dealer´s lock The lock is switched ON or OFF. When dealer´s lock is ON, it prohibits switching off of the secondary power and tray opening. When the lock is switched, ist ON/OFF status is stored in EEPROM.	“LOCK” sign appears when dealer´s lock is switched on, or when secondary power key or tray opening key is pressed while the lock is on. “UNLOCK” sign appears when dealer´s lock is switched off.	Repeat the same operation.
Initialization	In STOP (no disc) mode, press PLAY (DVD), REW and OPEN buttons on the player for 3 seconds or longer.	Initialization User settings are cancelled and player is initialized to factory setting.	“INIT”	
Region display	In STOP (no disc) mode, press PLAY (DVD), and OPEN buttons on the player, and “6” button on the remote control unit.	Region display	 Display 1 Panel controller jumper information N: NTSC / 6: PAL60 N: noPAL / P: PAL Region No.	Cancelled automatically 5 seconds later.
Timer 1 check	In STOP (no disc) mode, press PLAY (DVD), and FF buttons on the player, and “5” button on the remote control unit.	Timer 1 check Laser operation timer Operation time is measured separately for DVD laser and CD laser.	 Display 1  VHS STATUS CINEMA MODE DVD STATUS QUICK OSD Panas Press STATUS Key to select Display 1 or 2  Display 2 for example 0123=1230h Shown to the left is DVD laser time, and to the right CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. “0000” will follow “9999”.	Cancelled automatically 5 seconds later.
Timer 1 reset	While displaying Timer 1 data, press STOP (DVD) and FF buttons on the player, and “5” button on the remote control unit.	Timer 1 reset Laser operation timer Operation time of both DVD laser and CD laser is reset all at once.	 Display 1  VHS STATUS CINEMA MODE DVD STATUS QUICK OSD Panas Press STATUS Key to select Display 1 or 2  Display 2 after reset	Cancelled automatically 5 seconds later.
Timer 2 check	In STOP (no disc) mode, press PLAY (DVD) and FF buttons on the player, and “6” button on the remote control unit.	Timer 2 check Spindle motor operation timer	 Display 1  VHS STATUS CINEMA MODE DVD STATUS QUICK OSD Panas Press STATUS Key to select Display 1 or 2  Display 2 for example 3=3h Time is shown in 4 digits of decimal notation in a unit of 10 hours. “0000” will follow “9999”.	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press STOP (DVD) and FF buttons on the player, and “6” button on the remote control unit.	Timer 2 reset Spindle motor operation timer	 Display 1  VHS STATUS CINEMA MODE DVD STATUS QUICK OSD Panas Press STATUS Key to select Display 1 or 2  Display 2 after reset	Cancelled automatically 5 seconds later.

Front Panel Device control

⏻/I	**Standby/on switch ⏻/I**
⏏ EJECT	To eject a video cassette.
OPEN / CLOSE ⏏	Opens and closes the disc tray.

DVD-RAM DUBBING	To copy DVD to VHS-tape.
AV ENHANCER	Automatically optimises and adapts the audio and video settings to the disc used.

Description of some function buttons on the front panel is to be found under Remote control functions.

Front Panel Display

▶	Active picture signal. Use the VCR/DVD OUTPUT button to switch over the picture signal. To directly change the VCR or DVD output use the VHS, DVD toggle switches in combination with a function button (e.g. PLAY ▶).		
⊙⊙	A video cassette is in.	◎	A disc is in.

▶	Playback	❚❚	Still Playback	❚▶	Slow Playback
◀ ▶	Forward and backward search				
◀◀ ▶▶	VCR: Fast winding				

Remote Control TV-Operations

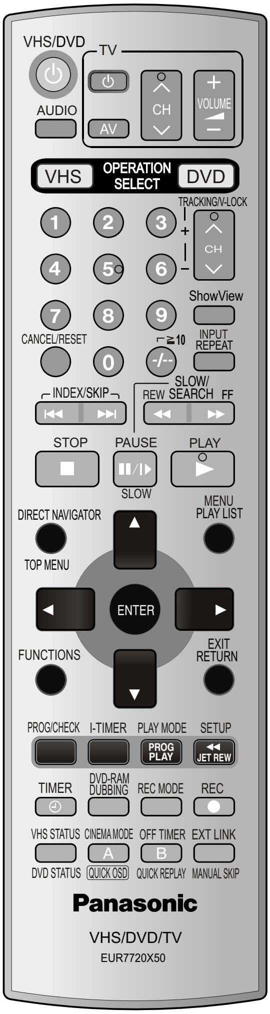
TV ⏻	To switch on and out the TV.
AV	Selects the TV set's AV port.

∧ CH ∨	To select the respective TV programme memory location.
+ VOLUME −	To control TV set volume.

General Operations

VHS/DVD ⏻	Standby/on switch. Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
AUDIO	Press the button a couple of times to select Sound mode.
VHS DVD	Remote control toggle switch for changing between VCR and DVD functions.
TRACKING/V-LOCK + − CH	VOLUME CH AUDIO and tracking control of disturbed images during playback
ShowView	Show View or Video Plus+ menu.
1 2 3 4 5 6 7 8 9 0 -/--	Direct input via numeric buttons (way of input = example: 18= -/-- 1 8)
CANCEL/RESET	Press the CANCEL/RESET button on the remote control unit to manually reset the tape counter to [0:00:00].
▲ ◀ ENTER ▶ ▼	OSD menu selection buttons. ENTER: Selects or saves a setting.
DIRECT NAVIGATOR TOP MENU	Plays back programmed recordings. Displays the main menu.
FUNCTIONS	To display the DVD FUNCTION menu.
MENU PLAY LIST	Displays the VCR menu. Displays a Playlist or DVD menu.
EXIT RETURN	Quits a menu.
INPUT REPEAT	AV input actuator button, pressing the INPUT button a couple of times will select A1, A2, A3 (front) or dc (DVD internal). DVD: REPEAT a title while playback.

INDEX/SKIP ⏮ ⏭	Finding the start of a title.
SLOW/ REW SEARCH FF ◀◀ ▶▶	Goes from Stop into Fast Forward or Fast Rewind mode. Forward and backward search during playback.
STOP ■	To eject the cassette / disc Press STOP ■ for more than 3 seconds.
PAUSE ❚❚/❚▶ SLOW	Pause a recording session. Still or slow motion playback.
PLAY ▶	Press PLAY to start playback.
PROG/CHECK	To display the VCR Timer recording menu.
I-TIMER	Switches the unit into stand-by mode after the set time. Defines programmes transmitted to the same program memory location at the same time.
PLAY MODE PROG PLAY	DVD: Random playback / Program playback VCR: Playback of programmed recording.
SETUP ◀◀ JET REW	Displays the DVD SETUP menu. VCR: For fast rewinding to the beginning of the tape.
TIMER ◷	Activates VCR Timer Recording.
DVD-RAM DUBBING	To copy from DVD to VCR.
REC MODE	Sets the VCR tape speed.
REC ●	Activates Video Recording.
VHS STATUS DVD STATUS	VCR: Press the button repeatedly to display the timer, tape counter or remaining tape time DVD: To display the DVD Informations.
CINEMA MODE A QUICK OSD	VCR: To change impression of picture. DVD: Display the DVD Status.
OFF TIMER B QUICK REPLAY	VCR: Switches to Standby after the selected off time. DVD: To replay some seconds of the film.
EXT LINK MANUAL SKIP	VCR: To record using the external recording level control. DVD: To skip 30sec. forward while playback.


VHS/DVD
TV
AUDIO
AV
CH
VOLUME
VHS
OPERATION SELECT
DVD
TRACKING/V-LOCK
ShowView
CANCEL/RESET
INPUT REPEAT
INDEX/SKIP
SLOW/
REW SEARCH FF
STOP
PAUSE
PLAY
SLOW
DIRECT NAVIGATOR
MENU PLAY LIST
TOP MENU
ENTER
FUNCTIONS
EXIT RETURN
PROG/CHECK
I-TIMER
PLAY MODE
SETUP
PROG PLAY
JET REW
TIMER
DVD-RAM DUBBING
REC MODE
REC
VHS STATUS
CINEMA MODE
OFF TIMER
EXT LINK
DVD STATUS
QUICK OSD
QUICK REPLAY
MANUAL SKIP
Panasonic
VHS/DVD/TV
EUR7720X50

SPECIFICATIONS

Power supply:	AC220-240 V, 50/60 Hz
Power consumption:	22 W +/-1,3W standby mode: 6W+/-0,4W
Dimensions:	430 (W)×270 (D)×89 (H) mm (excluding protrusions)
Mass:	3.9kg
Operating temperature range:	+5 to +35°C
Operating humidity range:	35 to 80% RH (no condensation)
Pickup:	
Wave length:	662 nm/785 nm
Laser power:	CLASS 1/CLASS 3A
Video Recording signal:	PAL
DVD Signal system:	PAL625/50, PAL525/60
NV-VP33	NTSC (playback on PAL TV)
DVD Region number:	Region No.2

Playable disctype:

1. (1) DVD-Video, DVD-RAM, DVD-Audio, DVD-R (R4.7)
2. (2) CD-Audio (CD-DA), CD-Audio (TEXT)
3. (3) Video CD (VCD, S-VCD)
4. (4) CD-R/CD-RW (CD-DA, Video CD formatted discs)
5. (5) MP3 (audio), WMA (audio), JPG (picture)
   Maximum number of tracks and groups recognizable:
   Compatible compression rate: between 32 kbps and 320 kbps
   4000 tracks and 400 groups

TV tuner system:	
NV-VP23EG/EC/EP	UHF: CH21-CH68
NV-VP28EG/EC	VHF: CHE2-CHE12
NV-VP33EG/EC/EP	UHF: CH21-CH69
NV-VP33EB/EBL	VHF (OIRT): CHR1-CHR12 VHF (CCIR): CHE2-CHE12 UHF: CH21-CH69 CATV (OIRT): 44MHz-470MHz (CCIR):S1-S5 (CCIR):M1-U10 (CCIR):S21-S41 (8MHz Raster)
RF out system:	
NV-VP33EB	UHF: CH21-CH68 UHF: 71 +/-3dBμ, 75 close
NV-VP33EBL	UHF: CH21-CH69 UHF: 71 +/-3dBμ, 75 close
NV-VP23,28,33EG/EC/EP	without RF converter
Video Recording system:	4 rotary heads helical scanning system
Video heads:	4 rotary heads 1 pair for recording and playback (L-R heads) 1 pair for trick play (L'-R' heads)
Video input:	
EURO AV (AV1 / AV2)	21 pin connector: 1.0 Vp-p, 75 terminated
VIDEO IN (AV3 front input)	cinch connector: 1.0 Vp-p, 75 terminated
Video output:	
EURO AV (AV1 / AV2)	21 pin connector: 1.0 Vp-p, 75 terminated VHS / DVD cinch connector: 1.0 Vp-p, 75 terminated DVD (only) cinch connector: 1.0 Vp-p, 75 terminated
S-VIDEO Y	1.0 Vp-p, 75 terminated
S-VIDEO C (PAL)	0.3 Vp-p, 75 terminated
S-VIDEO C (NTSC)	0.286 Vp-p, 75 terminated
DVD RGB video output:	
R output level:	0.7 Vp-p (75O) +/-10%
G output lebel:	0.7 Vp-p (75O) +/-10%
B output level:	0.7 Vp-p (75) +/-10%
Output terminal:	AV (21pin)
Number of terminals:	1 system

Audio heads:	
1 stationary head	Mono
2 channels	Hi-Fi Sound-Stereo
Audio input:	
EURO AV (AV1 / AV2)	21 pin connector: -6dBV (500mV), more than 10k
AUDIO IN (AV3 front input)	cinch connector: -6dBV (500mV), more than 10k
Audio output:	
VHS / DVD, DVD only	cinch connector: -6dBV (500mV), less than 1k
EURO AV (AV1 / AV2)	21 pin connector: -6dBV (500mV), less than 1k
DVD coaxial output	digital audio output
Audio characteristics:	
S/N ratio	Normal: more than 43dB (SP) Hi-Fi: 65dB, DVD: 115dB
Frequence responce	Normal: 80Hz - 8kHz, Hi-Fi: 20Hz - 20kHz DVD: 4Hz - 22kHz (linear audio) 48kHz sampling DVD: 4Hz - 44kHz (linear audio) 96kHz sampling CD Audio: 4Hz - 20kHz
Total harmonic distortion:	CD Audio: 0.0025%
Dynamic range:	
VCR:	more than 90dB
DVD (linear audio):	more than 98dB
CD audio:	more than 96dB
Videotape speed:	
SP:	23.39mm/s
LP:	11.695mm/s
EP:	7.796mm/s
Record / Playback time:	SP: 4hours (240min. tape)
LP:	8hours (240min. tape)
EP:	12hours (240min. tape)
FF / REW time:	60sec. (180min. tape)

Note:
Specifications are subject to change without notice.
Mass and dimensions are approximate.

MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.
WMA is a compression format developed by Microsoft Corporation. It achieves the same sound quality as MP3 with a file size that is smaller than that of MP3.

Designed for Windows Media™

■ Built-in decoders

You can play discs with these symbols.

DOLBY DIGITAL

DIGITAL dts SURROUND

Ref.no.	IC1101																			
Mode	1	2	3	4	5	6	7	8												
Stop	5,60	1,90	0,00	265,00	265,00	1,80	14,20	0,00												
Play	**5,60**	**2,00**	**0,00**	**264,00**	**263,00**	**1,90**	**14,20**	**0,00**												

Ref.no.	IC1200																			
Mode	1	2	3																	
Stop	5,00	0,00	2,40																	
Play	5,00	0,00	2,85																	

Ref.no.	IC1320																			
Mode	1	2	3																	
Stop	1,10	0,00	1,80																	
Play	1,10	0,00	1,80																	

Ref.no.	IC1340																			
Mode	1	2	3																	
Stop	1,10	0,00	3,80																	
Play	1,10	0,00	3,80																	

Ref.no.	IC1390																			
Mode	1	2	3	4	5															
Stop	11,50	2,30	8,80	0,00	0,00															
Play	11,50	2,30	8,80	0,00	0,00															

Ref.no.	IC2501																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	12,00	0,70	0,00	0,70	0,00	0,00	16,60	0,00	0,00	1,00	4,30	0,20	0,40	4,70	2,40	2,80	3,00	2,40	4,90	0,80
Play	12,00	2,40	0,00	0,70	0,00	0,00	16,60	0,00	2,80	1,80	1,80	0,60	1,40	2,60	2,40	2,80	2,80	1,30	5,60	3,70
Ref.no.																				
Mode	21	22	23	24	25	26	27													
Stop	13,80	0,80	0,80	0,00	0,80	0,00	0,00													
Play	13,40	3,70	3,70	0,00	4,00	0,00	0,00													

Ref.no.	IC3001																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0,00	0,00	0,00	5,10	2,16	2,60	2,10	2,10	2,10	2,60	2,60	3,30	0,00	1,60	2,80	3,20	2,80	2,00	3,00	0,00
Play	0,00	0,00	0,00	5,10	2,16	2,60	2,10	2,10	1,40	1,80	1,90	0,70	0,00	2,40	2,80	4,80	2,80	1,90	2,80	4,20
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	2,80	5,00	2,40	0,60	2,10	2,80	1,30	0,00	1,40	2,30	0,20	2,20	1,90	2,10	3,20	2,20	2,60	2,10	1,60	2,10
Play	2,80	5,00	2,40	0,90	2,10	2,80	0,90	0,00	2,20	3,00	0,35	2,20	1,90	2,10	3,00	2,20	3,60	2,10	1,40	2,10
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	2,50	2,00	2,20	0,00	3,00	3,10	5,10	0,10	3,80	5,30	2,40	5,40	2,60	0,00	2,10	0,00	2,20	2,00	5,00	5,00
Play	2,50	2,00	2,20	0,00	3,00	3,10	5,10	0,10	3,10	5,10	1,80	5,30	0,80	0,00	2,10	0,00	2,20	2,00	5,00	5,00
Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	0,00	2,60	2,20	2,50	2,20	2,30	0,50	2,40	2,30	1,80	2,20	0,10	3,70	2,80	2,80	2,30	2,80	0,00	5,30	2,60
Play	4,00	2,20	2,20	2,50	2,20	2,80	0,50	1,20	2,00	0,90	2,20	0,10	3,70	2,40	2,80	2,30	2,10	0,00	0,00	2,60
Ref.no.																				
Mode	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	5,30	0,00	3,20	5,00	2,30	2,30	2,30	0,00	2,30	2,30	2,30	5,10	0,20	2,60	2,60	2,60	0,00	2,40	0,00	2,80
Play	4,90	0,00	0,70	5,00	2,30	2,30	2,30	0,00	2,30	2,30	2,30	5,10	0,30	2,60	2,80	2,60	0,00	2,40	0,00	2,60

Ref.no.	IC4301																			
Mode	1	2	3	4	5	6	7	8												
Stop	2,50	2,50	2,50	-10,00	2,50	2,50	2,50	12,00												
Play	2,80	2,80	2,50	-10,00	2,60	2,50	2,80	12,00												

Ref.no.	IC4501																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	2,42	0,00	2,40	0,00	0,00	2,50	2,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	2,50	0,53	2,50	2,52	2,10
Play	2,42	0,00	2,40	0,00	0,00	2,50	2,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	2,50	0,00	2,50	2,52	0,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	2,10	2,10	0,00	2,10	5,10	2,10	0,00	4,30	1,80	1,75	0,00	2,50	2,50	0,50	2,50	4,60	0,00	0,00	0,00	5,00
Play	0,00	0,60	0,00	0,60	5,10	0,00	2,20	4,30	1,80	1,75	1,80	2,50	2,50	0,60	2,50	0,00	1,70	0,00	0,00	5,00
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	0,00	4,00	4,10	3,20	1,60	4,90	2,50	2,50	0,20	0,60	6,60	6,00	6,00	0,00	0,00	0,00	6,00	12,10	6,10	0,70
Play	0,00	3,70	4,50	3,20	1,60	4,90	2,50	2,50	0,20	0,60	6,00	6,00	6,00	0,00	0,00	0,00	6,00	12,10	6,10	1,10
Ref.no.																				
Mode	61	62	63	64																
Stop	2,50	2,40	0,00	0,00																
Play	2,50	2,40	0,00	0,00																

Ref.no.	IC4502																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Stop	0,50	2,30	0,00	0,00	0,00	1,00	-10,00	0,00	0,50	0,50	0,50	0,00	0,00	0,00	2,60	5,40				
Play	0,50	2,40	0,00	0,00	0,00	0,00	-9,30	0,00	0,50	0,50	0,50	0,00	0,00	0,00	2,70	5,30				

Ref.no.	IC4901																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0,00	3,60	4,10	0,00	4,00	0,50	3,50	6,20	0,00	10,80	2,00	12,10	0,00	0,00	0,00	3,80	2,10	2,40	0,00	0,30
Play	0,00	3,60	4,10	0,00	4,20	0,50	3,50	7,10	1,70	11,80	2,00	13,90	1,70	0,00	0,00	3,80	1,10	1,10	0,00	1,20
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
Stop	5,00	0,40	2,00	0,50	0,00	1,00	5,00	1,80	0,50	0,50	0,40	0,30	0,00	0,20	0,00	1,80				
Play	5,50	0,40	2,30	0,50	0,00	1,10	5,00	1,80	1,60	1,40	1,30	1,30	0,00	1,80	0,00	1,80				

Ref.no.	IC4905																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Stop	3,10	0,00	1,20	4,90	0,00	2,30	0,00	2,20	0,00	2,30	2,50	5,00	1,60	2,50	2,80	0,00				
Play	2,60	0,20	1,60	5,30	0,00	2,40	0,00	2,20	0,00	2,30	2,40	5,00	1,60	3,30	3,10	0,00				

Ref.no.	IC6001																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	4,80	0,00	4,60	0,00	0,00	5,00	4,60	4,90	3,20	0,00	0,00	2,60	0,00	5,20	0,00	0,00	4,80	2,60	0,00	0,00
Play	4,80	4,50	4,60	0,00	0,00	5,00	5,00	4,90	0,70	0,00	4,80	4,80	0,00	5,40	0,00	0,00	4,80	1,40	1,70	0,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	5,10	0,00	4,30	0,00	0,00	0,00	0,00	4,60	0,00	0,00	4,80	4,80	5,00	4,80	1,25	1,50	4,80	1,90	2,30	0,00
Play	4,80	0,00	4,30	4,80	0,00	0,00	0,00	0,00	0,00	0,00	4,80	4,80	0,00	4,80	1,25	1,50	4,80	1,90	1,90	0,00
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	1,80	0,00	4,80	0,00	1,10	0,00	1,60	2,10	0,00	0,70	2,50	1,70	5,00	2,00	0,00	1,00	0,00	4,80	0,00	0,00
Play	4,80	0,00	4,80	0,00	1,70	0,00	1,60	2,10	0,00	1,60	2,50	1,60	5,00	2,00	0,00	2,00	0,00	4,80	0,00	0,00
Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	0,00	0,00	0,00	5,10	0,00	0,00	0,00	4,40	3,30	4,50	3,60	3,50	0,00	0,00	0,00	0,00	4,70	5,10	5 /0	5 /0
Play	0,00	0,00	0,00	5,10	0,00	0,00	0,20	4,40	3,30	4,50	3,60	3,50	0,00	0,00	0,00	2,50	2,40	5,10	5 /0	5 /0
Ref.no.																				
Mode	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	0,00	0,00	0,00	0,00	5,10	2,50	2,50	0,00	0,70	2,50	2,50	2,50	0,60	2,50	2,50	2,50	2,50	5,00	5,00	0,00
Play	0,00	0,00	0,00	0,00	1,00	2,50	2,50	0,00	0,70	1,30	2,50	2,50	0,60	2,50	2,50	2,50	2,50	5,00	5,00	0,00

Ref.no.	IC6002																			
Mode	1	2	3	4	5	6	7	8												
Stop	0,00	0,00	0,00	0,00	3,60	3,70	4,80	5,10												
Play	0,00	0,00	0,00	0,00	3,90	3,70	4,80	5,10												

Ref.no.	IC6006																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0,00	2,70	5,10	5,00	0,00	4,20	4,60	5,00	5,00	0,00	2,20	2,00	0,90	5,00	5,00	3,30	2,60	4,90	5,00	4,90
Play	0,00	2,70	5,40	5,10	0,00	4,20	3,90	5,00	4,60	0,00	2,20	2,30	0,90	4,90	4,90	3,00	2,50	4,50	4,90	5,40
Ref.no.																				
Mode	21	22	23	24																
Stop	0,00	3,50	5,50	5,00																
Play	0,00	3,60	4,90	5,00																

Ref.no.	IC6101																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	3,30	4,50	4,50	1,00	4,20	4,50	4,90	4,90	2,30	2,50	0,00	0,00	NC	0,00	0,00	5,20	5,00	5,00	5,10	5,00
Play	3,30	4,50	4,50	1,00	4,20	4,50	4,90	4,90	2,30	2,50	0,00	0,00	NC	0,00	0,00	5,20	5,00	5,00	5,10	5,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	3,40	1,50	0,50	5,00	0,00	5,60	5,70	2,70	NC	NC	5,00	5,00	5,10	5,00	2,40	5,00	6,00	5,30	NC	NC
Play	2,90	1,50	0,50	5,00	0,00	5,10	4,90	2,40	NC	NC	5,00	5,00	5,10	5,00	2,60	5,00	5,50	4,90	NC	NC
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	NC	4,10	NC	2,40	NC	0,00	5,00	NC	NC	NC	6,00	-20,00	-20,00	-20,00	-20,00	-20,00	-20,00	-20,00	-20,00	NC
Play	NC	4,10	NC	2,40	NC	0,00	5,20	NC	NC	NC	1,50	-21,00	-21,00	-21,00	-21,00	-21,00	-24,00	-21,00	-21,00	NC
Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	NC	-20,00	NC	-23,00	-20,00	-20,00	-23,50	-18,00	-13,90	-15,80	-20,80	-23,30	-23,40	-20,80	-13,50	-16,00	-16,00	-13,50	-21,00	-21,00
Play	NC	-21,00	NC	-23,60	-21,00	-21,00	-23,50	-18,40	-8,30	-13,40	-18,40	-23,50	-23,60	-23,60	-13,60	-13,70	-13,70	-16,10	-18,70	-18,70
Ref.no.																				
Mode	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	-18,50	-21,00	-18,50	-13,50	-16,00	-13,50	-21,00	-21,00	-18,50	-18,50	-18,50	-21,00	-16,00	-8,70	NC	NC	NC	NC	NC	-25,30
Play	-16,20	-18,60	-16,10	-16,10	-13,60	-13,60	-21,00	-21,00	-16,10	-13,60	-18,70	-21,10	-16,20	-11,30	NC	NC	NC	NC	NC	-23,70

Ref.no.	IC7301																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	2,50	2,50	5,00	0,00	0,00	5,00	0,00	0,80	0,00	0,80	0,00	NC	0,00	1,60	1,60	0,00	0,00	2,00	0,00	0,00
Play	2,50	2,50	5,00	0,00	0,00	5,00	0,00	0,80	0,00	0,80	0,00	NC	0,00	1,60	1,60	0,00	0,00	2,00	0,00	0,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	3,30	0,00	NC	2,00	2,00	5,00	0,00	5,00	3,80	3,80	0,80	0,80	0,80	0,80	5,00	0,00	5,00	2,50	NC	NC
Play	3,30	0,00	NC	2,00	2,00	5,00	0,00	5,00	3,80	3,80	0,80	0,80	0,80	0,80	5,00	0,00	5,00	2,50	NC	NC
Ref.no.																				
Mode	41	42	43	44																
Stop	2,50	5,00	2,50	0,00																
Play	2,50	5,00	2,50	0,00																

Ref.no.	IC8001																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	3,00	3,00	0,00	3,20	3,20	3,20	3,20	3,20	0,00	3,20	3,10	3,20	3,20	3,20	3,00	0,00	3,20	3,20	3,20	0,00
Play	3,00	3,00	0,00	3,20	3,20	3,20	3,20	3,20	0,00	3,20	3,10	3,20	3,20	3,20	3,00	0,00	3,20	3,20	3,20	0,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	0,00	3,20	3,00	1,20	0,70	1,20	3,30	3,20	0,00	0,00	0,00	3,30	3,70	3,20	0,00	0,40	2,80	3,30	0,00	0,00
Play	0,00	3,20	2,30	1,50	1,10	1,20	0,80	3,20	0,00	0,00	0,90	0,70	2,20	3,20	0,00	1,00	2,20	3,30	0,00	0,00
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	2,80	0,60	2,40	1,20	2,00	1,00	0,20	3,20	0,00	2,50	0,80	2,70	3,20	0,00	0,00	3,20	3,20	0,00	3,20	3,20
Play	0,00	1,40	1,60	1,20	1,00	0,70	1,00	3,20	0,00	0,00	0,90	1,80	3,20	0,00	0,00	3,20	3,20	0,00	3,20	3,20
Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	0,00	3,20	0,00	0,00	0,00	0,60	0,00	2,90	2,70	1,20	0,00	0,00	3,20	0,00	1,60	1,60	0,00	3,30	1,40	3,20
Play	0,00	3,20	1,90	0,00	0,00	0,40	0,00	2,90	2,70	1,20	0,00	0,00	3,20	0,00	1,60	2,10	0,00	0,00	3,30	0,00
Ref.no.																				
Mode	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	3,20	0,00	0,00	3,20	0,00	0,00	0,00	0,00	1,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,20	0,70	0,00
Play	3,20	0,00	3,30	3,20	0,00	0,00	0,00	0,00	1,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,20	0,70	0,00
Ref.no.																				
Mode	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Stop	2,30	2,00	1,80	0,10	0,00	0,00	3,20	2,00	2,00	1,80	1,80	1,40	0,70	1,60	1,60	1,60	1,60	3,20	1,70	1,60
Play	2,30	2,00	1,80	0,10	0,00	0,00	3,20	2,00	2,00	1,80	1,80	1,40	1,40	1,60	1,60	1,60	1,60	3,20	1,80	1,60
Ref.no.																				
Mode	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Stop	1,30	0,00	0,00	0,00	0,00	0,00	2,20	1,60	2,20	2,20	2,30	2,30	2,20	2,10	2,20	2,20	2,20	2,20	1,60	1,60
Play	1,30	0,00	0,00	0,00	0,00	0,00	2,20	1,60	2,20	2,20	2,20	2,20	2,20	2,40	2,20	2,20	2,20	2,20	1,60	1,80
Ref.no.																				
Mode	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Stop	3,20	1,20	2,20	2,10	0,00	1,60	1,60	1,50	0,30	3,20	0,00	0,00	1,30	1,30	2,20	0,30	0,00	0,80	3,20	0,00
Play	3,20	1,10	2,40	2,10	0,00	1,60	1,60	1,60	0,60	3,20	0,40	0,40	1,30	1,30	2,20	0,50	0,00	0,80	3,20	0,00
Ref.no.																				
Mode	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Stop	3,20	0,00	1,50	0,00	1,50	1,50	3,20	0,00	1,60	1,70	1,60	1,20	0,00	0,00	0,00	0,00	1,60	3,20	0,00	3,20
Play	3,20	0,00	1,50	0,00	1,40	1,50	3,20	0,00	1,60	1,30	1,60	1,20	0,00	0,00	0,00	0,00	1,60	3,20	0,00	3,20
Ref.no.																				
Mode	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Stop	0,00	3,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,20	0,00	0,90	1,63	0,70	1,50	3,20	1,20	1,40	1,50	0,00
Play	0,00	3,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,20	0,00	0,90	1,30	0,70	1,40	3,20	1,00	1,30	1,50	0,00
Ref.no.																				
Mode	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Stop	0,00	3,20	1,60	0,50	0,00	1,50	1,30	1,80	3,20	1,50	0,00	0,60	0,00	3,00	3,00	3,20	1,50	0,00	1,20	1,50
Play	0,00	3,20	1,50	0,60	0,00	1,30	1,30	1,40	3,20	1,50	0,50	0,70	0,00	3,00	3,00	3,20	1,30	0,00	1,20	1,50
Ref.no.																				
Mode	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
Stop	0,00	0,00	1,40	0,00	3,20	1,30	0,00	1,33	0,00	0,00	3,20	1,40	0,00	2,50	0,00	1,20	0,00	0,00	3,20	2,60
Play	0,00	0,00	1,40	0,00	3,20	1,40	0,00	1,40	0,00	0,00	3,20	1,40	0,00	2,50	0,00	1,20	0,00	0,00	3,20	3,10
Ref.no.																				
Mode	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256				
Stop	1,28	0,00	1,30	3,20	2,97	3,20	0,00	3,20	3,00	0,00	3,00	3,00	0,00	3,30	3,30	3,00				
Play	1,30	0,00	1,50	3,20	3,20	3,20	0,00	3,20	3,00	0,00	3,00	3,00	0,00	3,30	3,20	3,00				

Ref.no.	IC8003																			
Mode	1	2	3	4	5	6	7	8												
Stop	0,00	0,00	0,00	0,00	3,30	3,30	0,00	3,30												
Play	0,00	0,00	0,00	0,00	3,30	3,30	0,00	3,30												

Ref.no.	IC8101																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	1,00	0,30	0,60	0,40	0,30	2,80	2,80	0,80	2,00	0,00	3,30	3,30	0,60	3,30	0,00	0,50	2,40	2,50	0,50	2,20
Play	0,00	3,70	3,60	3,00	3,60	3,60	3,60	3,30	0,00	0,00	3,30	3,30	0,00	3,30	0,00	0,00	0,00	3,30	3,30	3,40
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	2,20	0,80	3,30	2,20	2,90	2,50	0,00	2,30	0,80	0,90	1,20	0,50	0,30	0,30	0,20	0,20	3,30	1,20	1,20	1,50
Play	3,60	3,60	2,70	3,30	0,00	3,30	0,00	0,90	0,80	0,90	0,90	0,80	0,70	0,60	0,50	0,15	3,30	0,40	0,40	0,30
Ref.no.																				
Mode	41	42	43	44	45	46	47	48												
Stop	1,40	1,40	1,60	1,70	2,20	0,00	3,30	0,70												
Play	0,00	1,50	2,20	0,90	1,70	0,00	3,30	1,80												

Ref.no.	IC8102																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	3,30	3,20	3,30	3,20	3,10	0,00	3,10	3,30	3,30	3,10	3,00	0,00	2,90	3,30	3,10	3,30	3,30	3,30	2,80	3,00
Play	3,30	3,20	3,40	3,30	3,30	0,00	3,30	3,30	3,30	3,30	3,30	0,00	3,30	3,30	3,30	3,60	3,30	3,30	3,10	0,60
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	1,70	0,00	0,00	0,00	0,00	1,60	3,60	0,00	1,60	1,60	1,60	1,60	0,00	0,00	0,00	0,00	3,30	1,60	3,00	0,00
Play	0,60	0,00	0,60	0,60	0,00	0,00	3,30	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,30	1,60	3,30	0,00
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
Stop	0,00	3,20	3,30	3,30	3,20	0,00	3,10	3,20	3,30	3,00	3,00	0,00	3,10	0,00						
Play	0,00	3,30	3,40	3,30	3,30	0,00	3,60	3,30	3,30	3,30	3,30	0,00	3,30	0,00						

Ref.no.	IC8201																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	1,60	1,60	1,60	1,70	1,70	1,60	0,00	5,00	0,00	0,00	2,70	2,50	2,80	2,60	4,60	4,20	3,70	4,20	0,00	5,00
Play	1,60	1,60	1,60	1,90	1,90	1,80	0,00	5,00	3,30	0,00	2,50	2,50	2,50	2,60	4,20	4,70	5,80	2,70	0,00	5,00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28												
Stop	9,00	8,90	1,70	2,40	2,40	1,70	0,00	5,00												
Play	9,00	9,00	1,80	2,40	2,40	1,70	3,40	5,00												

Ref.no.	IC8402																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Stop	1,60	1,60	0,00	1,60	3,30	3,30	3,30	3,30	0,00	2,50	2,50	2,20	0,00	5,00	0,00	0,00				
Play	1,60	1,60	0,70	1,60	3,30	3,30	3,20	3,30	0,00	2,50	2,50	2,50	0,00	5,00	5,00	5,00				

Ref.no.	**Q1002**			**Q1003**			**Q1004**			**QR1001**			**QR1002**					
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**			
Stop	12,20	12,90	15,60	5,10	5,80	6,20	5,00	5,80	7,70	0	4,7	4,7	-9,2	5	-9,3			
Play	**12,00**	**12,70**	**14,60**	**5,10**	**5,80**	**6,20**	**5,00**	**5,80**	**7,70**	**0**	**4,7**	**4,7**	**-9,2**	**5**	**-9,3**			

Ref.no.	**Q1321**			**Q1322**			**Q1341**			**Q1360**			**Q1601**			**Q1602**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	1,26	1,90	3,20	1,26	1,90	3,52	4,00	4,80	4,63	5,10	5,74	6,10	5,80	6,70	6,60	5,70	6,70	6,60
Play	**1,26**	**1,90**	**2,90**	**1,26**	**1,90**	**2,99**	**3,30**	**4,00**	**4,70**	**5,10**	**5,74**	**5,80**	**5,80**	**6,70**	**6,60**	**5,70**	**6,70**	**6,60**

Ref.no.	**Q3001**						**Q4003**			**Q4004**			**Q4005**			**Q4006**		
Mode	**E**	**B**	**C**				**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	1,55	2,20	5,10				0,00	0,70	0,00	0,00	0,60	0,00	0,00	0,10	0,10	5,30	5,60	0,10
Play	**1,55**	**2,20**	**5,10**				**0,00**	**0,70**	**0,00**	**0,00**	**0,70**	**0,00**	**0,00**	**0,15**	**0,30**	**5,52**	**5,50**	**0,10**

Ref.no.	**QR4001**			**QR4002**			**QR4005**			**QR4501**			**QR4503**			**QR4502**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	0,00	0,00	0,00	5,10	0,00	5,05	0,00	0,00	5,50	0,00	4,60	0,00	0,00	4,50	0,00	0,00	5,60	5,10
Play	**0,00**	**0,00**	**0,00**	**5,10**	**0,00**	**5,05**	**0,00**	**0,00**	**5,50**	**0,00**	**-0,80**	**0,00**	**0,00**	**-1,50**	**0,00**	**0,00**	**0,00**	**1,50**

Ref.no.	**Q4901**			**Q4902**			**Q4903**			**Q4904**			**Q4905**			**Q4906**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	0,00	0,00	6,00	0,40	1,04	0,00	0,40	1,00	0,00	5,10	5,60	5,80	11,90	12,20	12,20	0,00	5,00	0,30
Play	**0,00**	**0,00**	**6,00**	**0,40**	**1,04**	**0,00**	**0,40**	**1,00**	**0,00**	**1,86**	**2,50**	**5,00**	**11,90**	**12,20**	**12,20**	**0,40**	**0,00**	**0,40**

Ref.no.	**Q4907**			**Q4908**			**Q4909**			**Q4910**								
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**						
Stop	0,00	0,70	0,00	0,00	0,70	0,00	0	0	1,3	0	0	0,9						
Play	**0,00**	**0,70**	**0,00**	**0,00**	**0,70**	**0,00**	**0,5**	**1,2**	**0**	**0,3**	**0,9**	**0**						

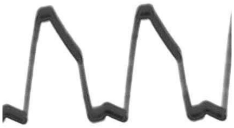
Ref.no.	**QR4901**			**QR4902**			**QR4903**			**QR4904**			**QR4905**			**QR4906**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	0,00	1,10	0,00	0,00	4,30	0,00	0,00	0,20	3,70	0,00	0,30	4,10	0,00	1,80	0,80	0,00	1,90	0,00
Play	**0,00**	**1,10**	**0,00**	**0,00**	**4,20**	**0,00**	**0,00**	**0,20**	**3,70**	**0,00**	**0,30**	**3,70**	**0,00**	**1,80**	**0,80**	**0,00**	**1,90**	**0,00**

Ref.no.	**QR4907**			**QR4908**			**QR4909**			**QR4910**			**QR4911**			**QR4912**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	0,00	0,00	0,00	0,00	0,00	1,80	0,00	5,20	0,00	0	5,5	0	0	5,2	0	0	5,2	0
Play	**0,00**	**0,70**	**0,00**	**0,00**	**0,00**	**1,80**	**0,00**	**1,30**	**0,00**	**0**	**1,3**	**0**	**0**	**-3,3**	**0**	**0**	**-3,3**	**0**

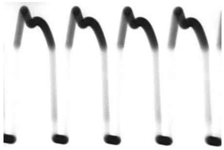
Ref.no.	**Q4971**						**Q6001**			**Q6002**			**QR6001**			**QR6101**		
Mode	**E**	**B**	**C**				**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	1,8	2,5	5,1				0,80	1,60	5,00	0,58	1,00	5,10	0,00	5,30	0,00	5,9	5,9	1
Play	**1,8**	**3,1**	**5,1**				**1,50**	**2,50**	**5,00**	**1,00**	**1,60**	**5,10**	**0,00**	**0,00**	**12,10**	**5,9**	**5,9**	**1**

Ref.no.	**Q8001**			**Q8002**			**Q8003**			**Q8004**			**QR8001**			**QR8002**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**	**E**	**B**	**C**
Stop	0,00	0,00	6,20	0,00	0,00	5,50	6,20	5,00	5,30	6,20	5,90	-3,00	3,30	3,90	0,00	0,00	0,30	0,00
Play	**0,37**	**0,98**	**3,90**	**0,00**	**0,00**	**5,00**	**4,60**	**4,10**	**2,10**	**5,90**	**5,00**	**0,70**	**3,40**	**0,00**	**4,00**	**0,00**	**0,00**	**4,20**

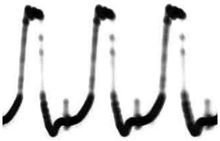
Ref.no.	**QR8003**			**QR8005**		
Mode	**E**	**B**	**C**	**E**	**B**	**C**
Stop	3,00	4,10	4,40	2,90	3,30	5,00
Play	**3,00**	**3,80**	**4,40**	**3,20**	**3,30**	**4,80**



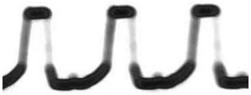
T1150-3 STOP
190Vp-p (5msec.div.)



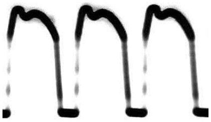
T1150-5 STOP
500Vp-p (5usec.div.)



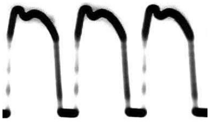
T1150-7 STOP
36Vp-p (5usec.div.)



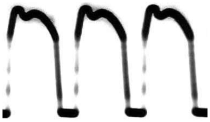
T1150-14 STOP
100Vp-p (5usec.div.)



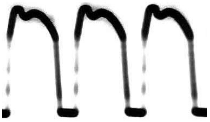
T1150-16 STOP
1.8Vp-p (5usec.div.)



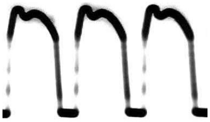
T1150-17 STOP
2.2Vp-p (5usec.div.)



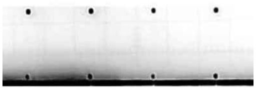
T1150-18 STOP
3.4Vp-p (5usec.div.)



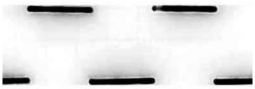
T1150-19 STOP
5.2Vp-p (5usec.div.)



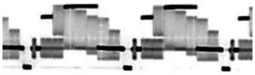
T1150-20 STOP
125Vp-p (5usec.div.)



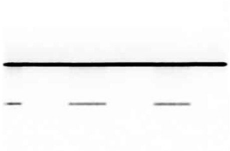
IC6001-13 PAUSE
4.4Vp-p (10msec.div.)



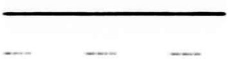
IC6001-18 REC
4.4Vp-p (10msec.div.)



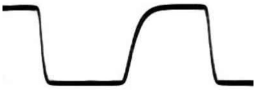
IC6001-52 REC
2.0Vp-p (10usec.div.)



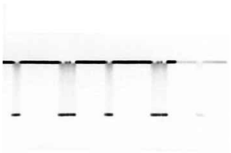
IC6001-70 REC
4.6Vp-p (10msec.div.)



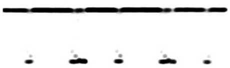
IC6001-68,69 REC
5.2Vp-p (10msec.div.)



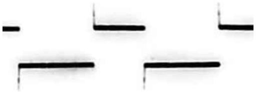
IC6001-79,80 FF/REW
5.0Vp-p (1msec.div.)



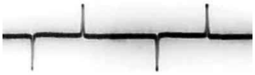
IC6001-71 REC
4.8Vp-p (10msec.div.)



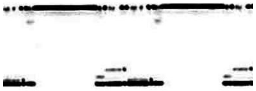
IC6001-72 REC
4.8Vp-p (10msec.div.)



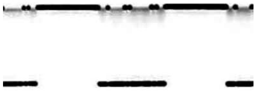
IC6001-94,95 REC
6.0Vp-p (10msec.div.)



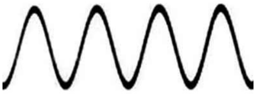
IC6001-97 PLAY
4.2Vp-p (10msec.div.)



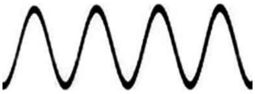
IC3001-73 REC/PLAY
4.8Vp-p (5msec.div.)



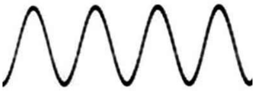
IC3001-74 REC/PLAY
4.6Vp-p (5msec.div.)



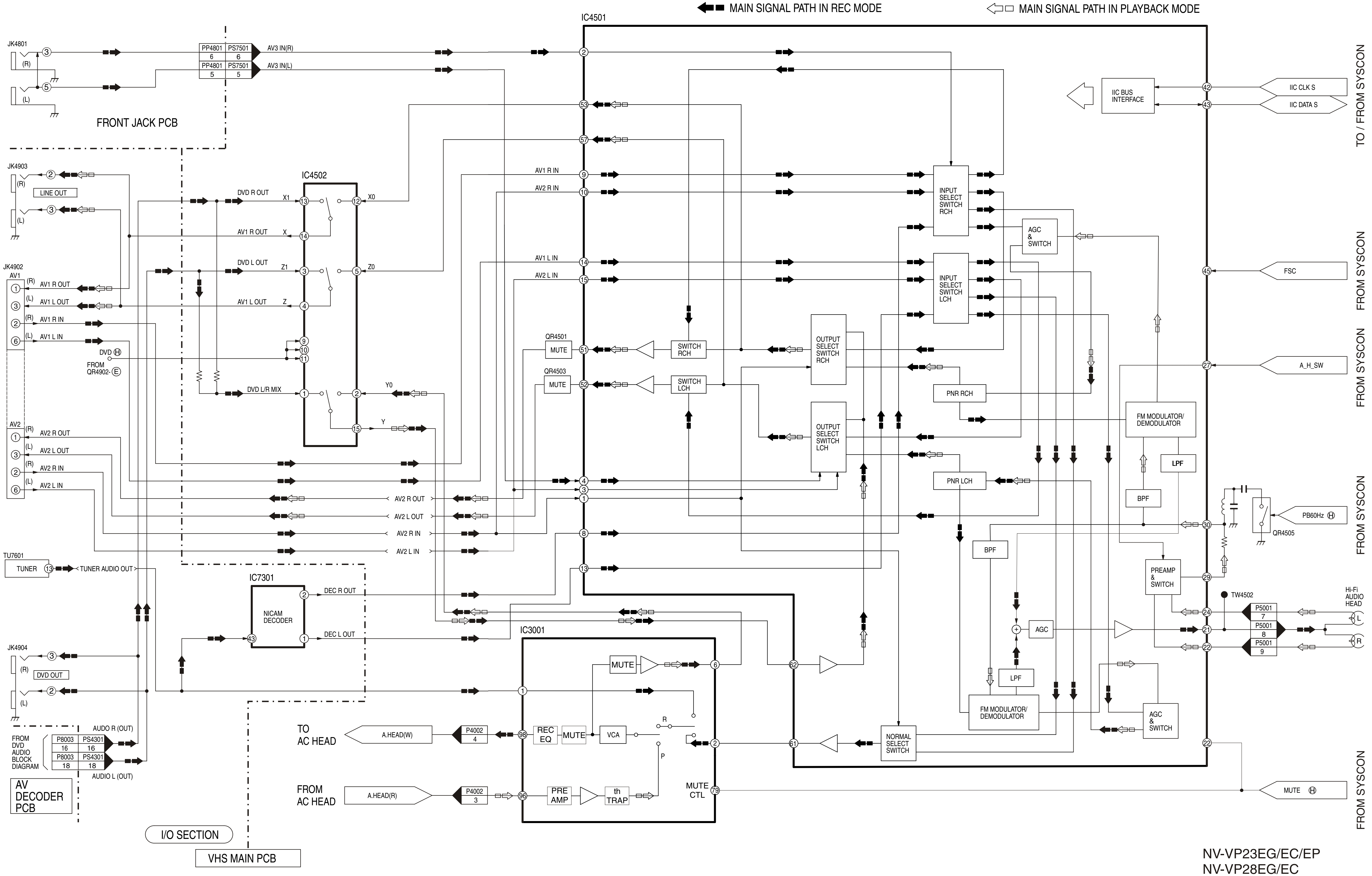
IC4501-9,14 REC
1.2Vp-p (5msec.div.)



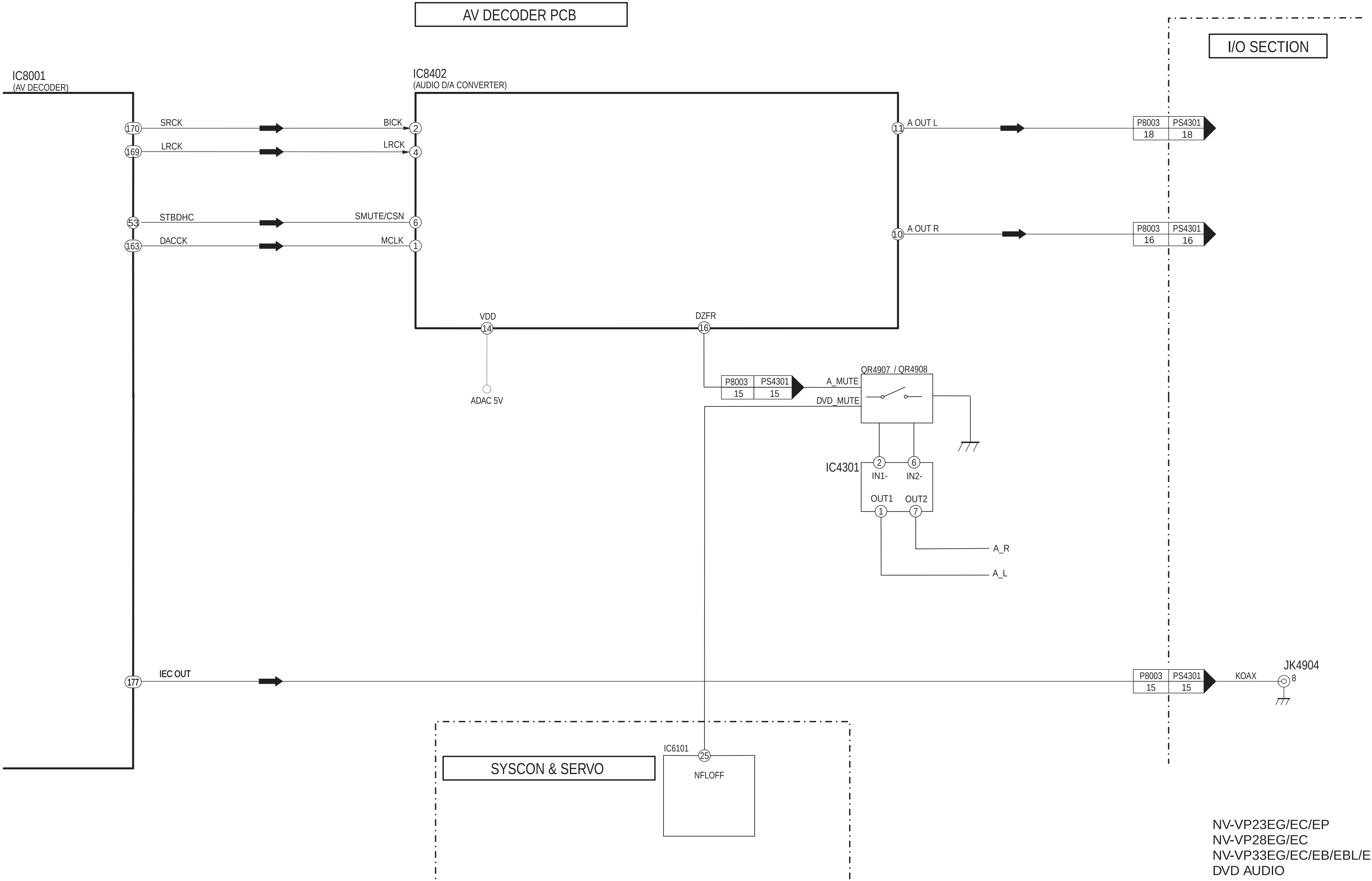
IC4501-21 REC
1.2Vp-p (5msec.div.)



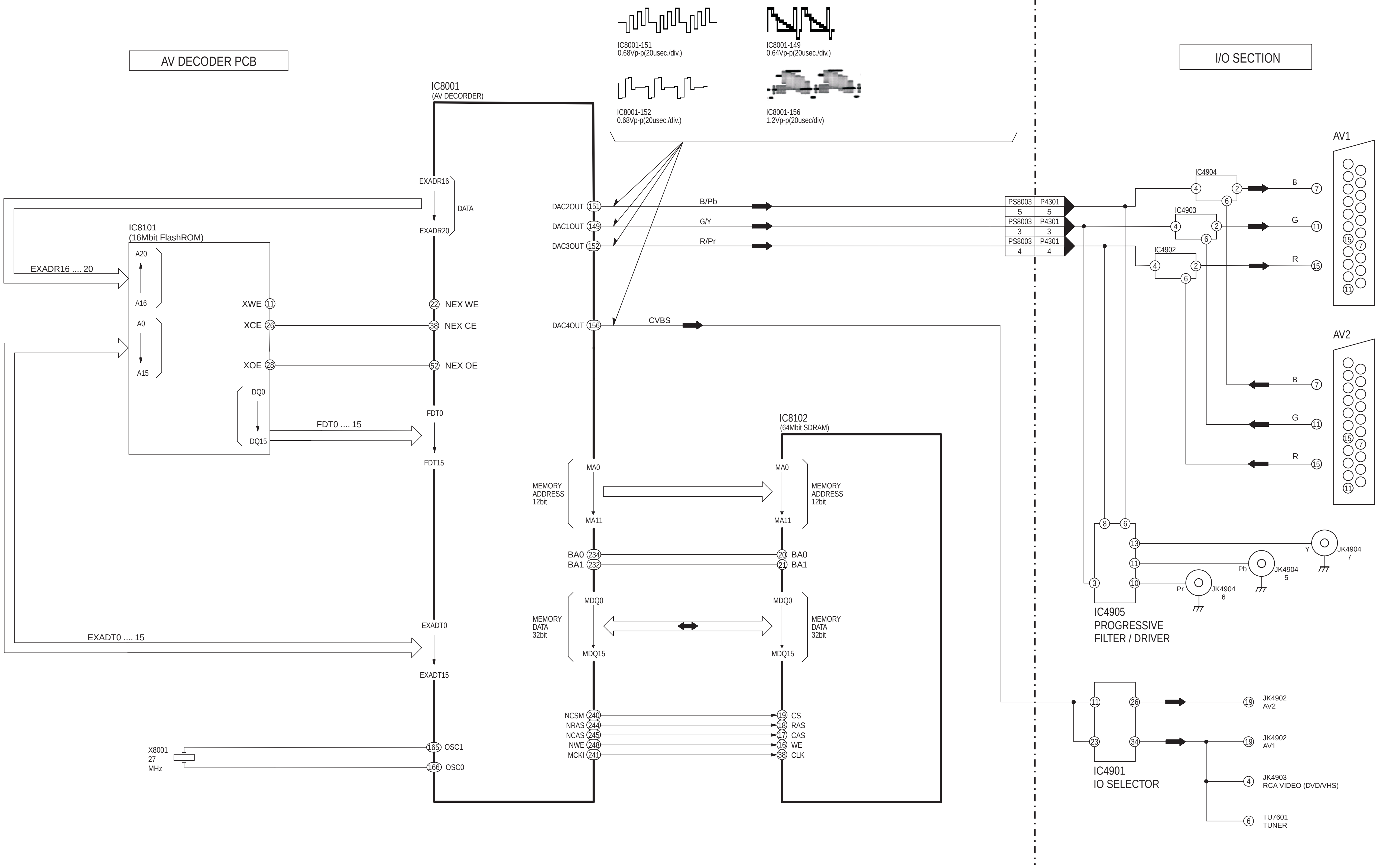
IC4501-53,57 REC/PLAY
1.2Vp-p (5msec.div.)


MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
IC4501
JK4801
(R)
(L)
PP4801
PS7501
AV3 IN(R)
AV3 IN(L)
FRONT JACK PCB
JK4903
LINE OUT
IC4502
DVD R OUT
X1
X0
AV1 R OUT
X
DVD L OUT
Z1
Z0
AV1 L OUT
Z
JK4902
AV1
AV1 R IN
AV1 L IN
DVD Ⓗ
FROM QR4902-Ⓔ
DVD L/R MIX
Y0
Y
AV2
AV2 R OUT
AV2 L OUT
AV2 R IN
AV2 L IN
TU7601
TUNER
TUNER AUDIO OUT
IC7301
NICAM DECODER
DEC R OUT
DEC L OUT
JK4904
DVD OUT
FROM DVD AUDIO BLOCK DIAGRAM
P8003
PS4301
AUDIO R (OUT)
AUDIO L (OUT)
AV DECODER PCB
I/O SECTION
VHS MAIN PCB
AV1 R IN
AV2 R IN
AV1 L IN
AV2 L IN
QR4501
MUTE
QR4503
SWITCH RCH
SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
INPUT SELECT SWITCH RCH
INPUT SELECT SWITCH LCH
AGC & SWITCH
PNR RCH
PNR LCH
FM MODULATOR/ DEMODULATOR
LPF
BPF
IIC BUS INTERFACE
IIC CLK S
IIC DATA S
TO / FROM SYSCON
FSC
FROM SYSCON
A_H_SW
FROM SYSCON
PB60Hz Ⓗ
QR4505
FROM SYSCON
PREAMP & SWITCH
TW4502
P5001
Hi-Fi AUDIO HEAD
L
R
AGC
IC3001
MUTE
REC EQ
VCA
R
P
PRE AMP
th TRAP
MUTE CTL
TO AC HEAD
A.HEAD(W)
P4002
FROM AC HEAD
A.HEAD(R)
NORMAL SELECT SWITCH
MUTE Ⓗ
FROM SYSCON

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB AUDIO
BLOCK DIAGRAM


AV DECODER PCB
I/O SECTION
IC8001
(AV DECODER)
IC8402
(AUDIO D/A CONVERTER)
170
SRCK
BICK
2
169
LRCK
LRCK
4
53
STBDHC
SMUTE/CSN
6
163
DACCK
MCLK
1
11
A OUT L
P8003
PS4301
18
18
10
A OUT R
P8003
PS4301
16
16
VDD
14
DZFR
16
ADAC 5V
P8003
PS4301
15
15
A_MUTE
QR4907 / QR4908
DVD_MUTE
IC4301
2
6
IN1-
IN2-
OUT1
OUT2
1
7
A_R
A_L
177
IEC OUT
P8003
PS4301
15
15
KOAX
JK4904
8
SYSCON & SERVO
IC6101
25
NFLOFF

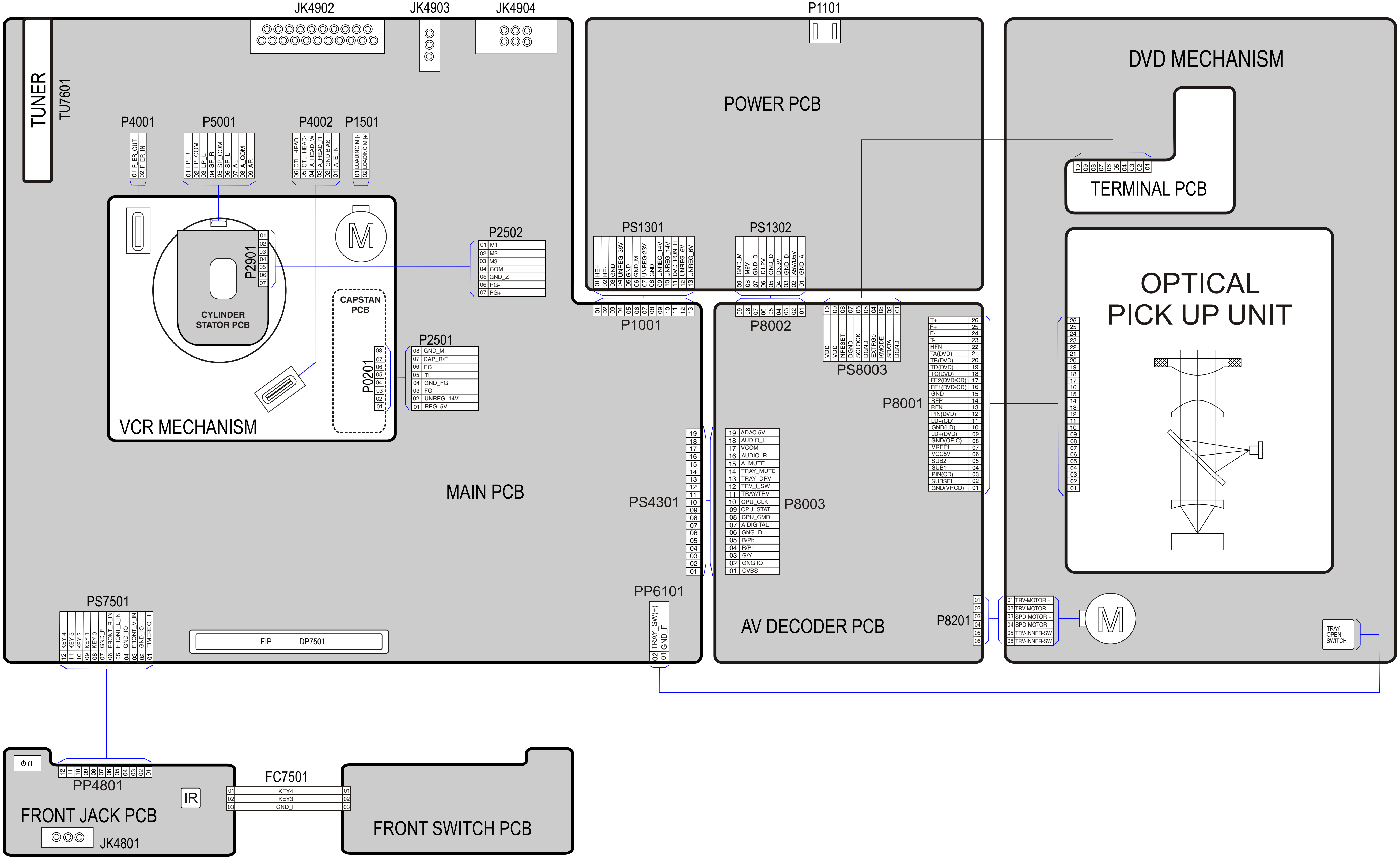
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DVD AUDIO
BLOCK DIAGRAM



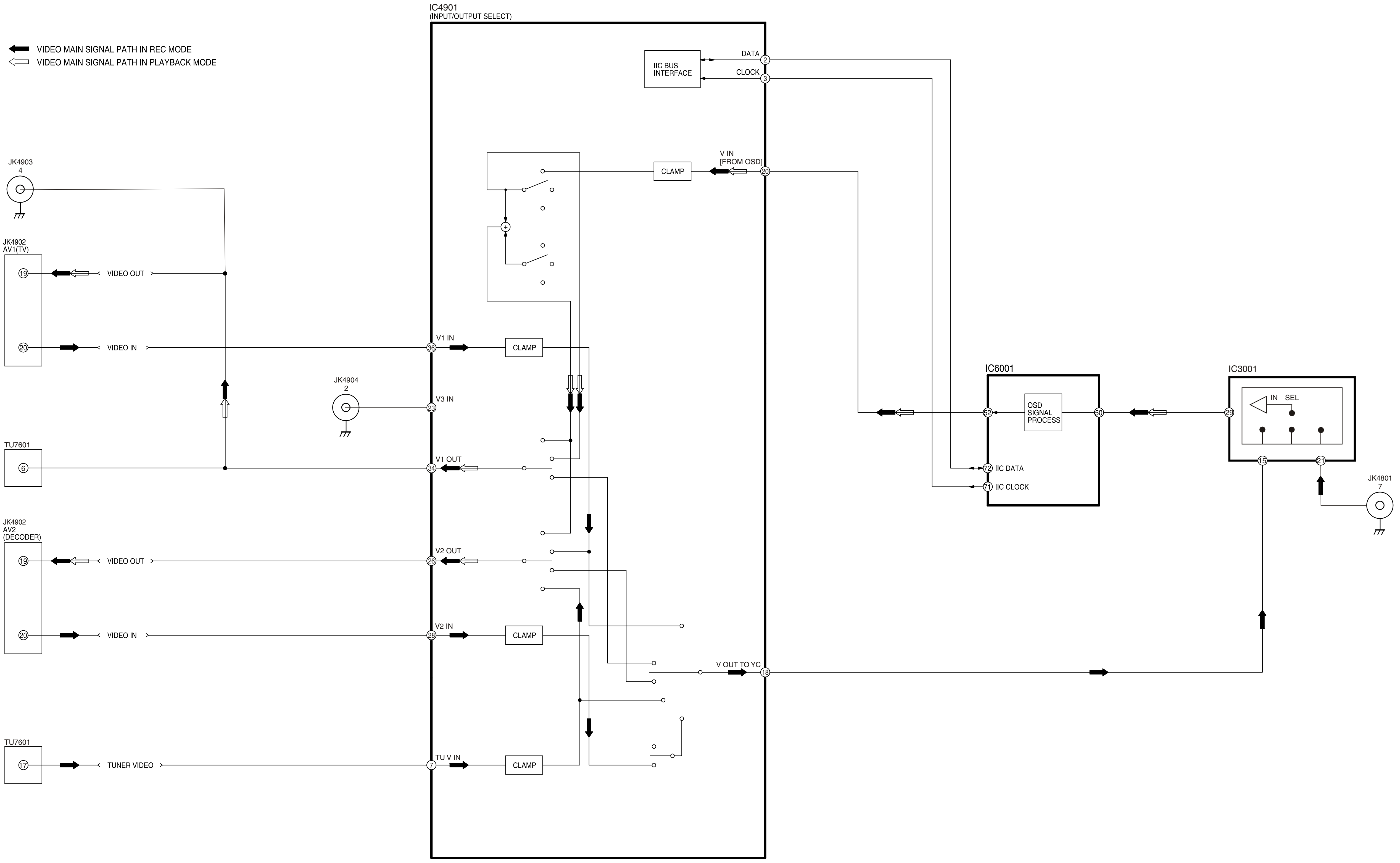
AV DECODER PCB
I/O SECTION
IC8001-151
0.68Vp-p(20usec./div.)
IC8001-149
0.64Vp-p(20usec./div.)
IC8001-152
0.68Vp-p(20usec./div.)
IC8001-156
1.2Vp-p(20usec/div)
IC8001
(AV DECORDER)
EXADR16
DATA
EXADR20
IC8101
(16Mbit FlashROM)
A20
A16
A0
A15
EXADR16 20
XWE 11
XCE 26
XOE 28
DQ0
DQ15
FDT0 15
22 NEX WE
38 NEX CE
52 NEX OE
FDT0
FDT15
DAC2OUT 151
DAC1OUT 149
DAC3OUT 152
DAC4OUT 156
B/Pb
G/Y
R/Pr
CVBS
PS8003 5
P4301 5
PS8003 3
P4301 3
PS8003 4
P4301 4
IC8102
(64Mbit SDRAM)
MA0
MA11
MEMORY ADDRESS 12bit
BA0 234
BA1 232
20 BA0
21 BA1
MDQ0
MDQ15
MEMORY DATA 32bit
EXADT0
EXADT15
EXADT0 15
NCSM 240
NRAS 244
NCAS 245
NWE 248
MCKI 241
19 CS
18 RAS
17 CAS
16 WE
38 CLK
X8001
27
MHz
165 OSC1
166 OSC0
IC4904
IC4903
IC4902
AV1
AV2
B 7
G 11
R 15
IC4905
PROGRESSIVE
FILTER / DRIVER
Y JK4904 7
Pb JK4904 5
Pr JK4904 6
IC4901
IO SELECTOR
JK4902 AV2
JK4902 AV1
JK4903 RCA VIDEO (DVD/VHS)
TU7601 TUNER

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
DVD VIDEO
BLOCK DIAGRAM

NAVIGATION
POWER PCB
MAIN PCB - AUDIO / VIDEO
MAIN PCB - I/O
MAIN PCB - SYSCON & SERVO
AV DECODER PCB
FRONT PANEL PCB
TERMINAL PCB

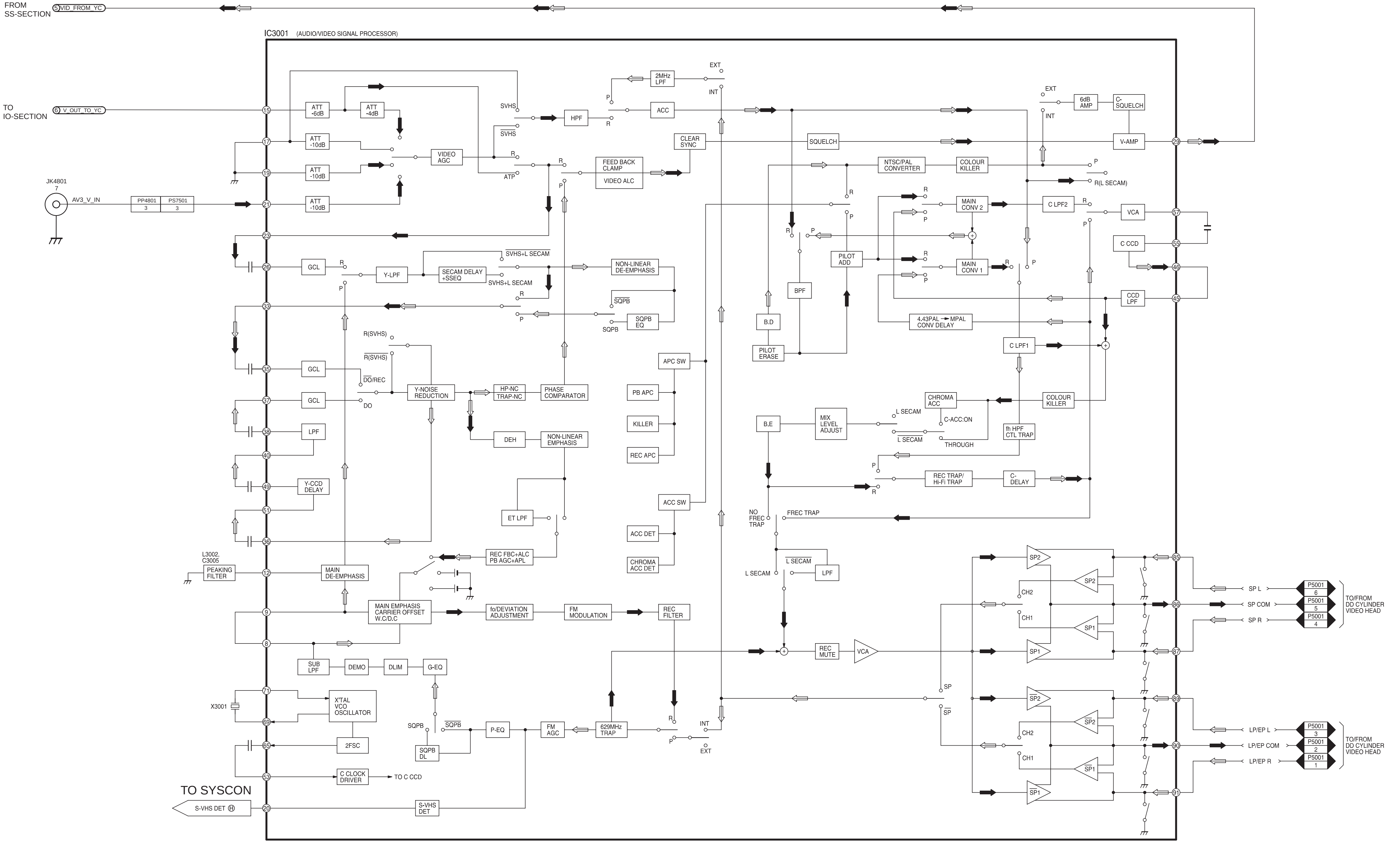

JK4902
JK4903
JK4904
P1101
TUNER
TU7601
P4001
01 F_ER_OUT
02 F_ER_IN
P5001
01 LP_R
02 LP_COM
03 LP_L
04 SP_R
05 SP_COM
06 SP_L
07 AL
08 A_COM
09 AR
P4002
06 CTL_HEAD+
05 CTL_HEAD-
04 A_HEAD_W
03 A_HEAD_R
02 GND BIAS
01 A_E_IN
P1501
01 LOADING M [-]
02 LOADING M [+]
M
P2901
01 02 03 04 05 06 07
CYLINDER STATOR PCB
CAPSTAN PCB
P0201
08 07 06 05 04 03 02 01
VCR MECHANISM
P2502
01 M1
02 M2
03 M3
04 COM
05 GND_Z
06 PG-
07 PG+
P2501
08 GND_M
07 CAP_R/F
06 EC
05 TL
04 GND_FG
03 FG
02 UNREG_14V
01 REG_5V
POWER PCB
PS1301
01 HE+
02 HE-
03 GND
04 UNREG_36V
05 GND
06 GND_M
07 UNREG-23V
08 GND
09 UNREG_14V
10 UNREG_14V
11 DVD_PON_H
12 UNREG_6V
13 UNREG_6V
PS1302
09 GND_M
08 M9V
07 GND_D
06 D1.2V
05 GND_D
04 D3.3V
03 GND_D
02 A5V/D5V
01 GND_A
P1001
01 02 03 04 05 06 07 08 09 10 11 12 13
P8002
09 08 07 06 05 04 03 02 01
PS8003
10 VDD
09 VDD
08 NRESET
07 DGND
06 SCLOCK
05 DGND
04 EXTRG0
03 KMODE
02 SDATA
01 DGND
P8001
T+ 26
F+ 25
F- 24
T- 23
HFN 22
TA(DVD) 21
TB(DVD) 20
TD(DVD) 19
TC(DVD) 18
FE2(DVD/CD) 17
FE1(DVD/CD) 16
GND 15
RFP 14
RFN 13
PIN(DVD) 12
LD+(CD) 11
GND(LD) 10
LD+(DVD) 09
GND(OEIC) 08
VREF1 07
VCC5V 06
SUB2 05
SUB1 04
PIN(CD) 03
SUBSEL 02
GND(VRCD) 01
DVD MECHANISM
TERMINAL PCB
10 09 08 07 06 05 04 03 02 01
OPTICAL PICK UP UNIT
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
MAIN PCB
PS4301
19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01
P8003
19 ADAC 5V
18 AUDIO_L
17 VCOM
16 AUDIO_R
15 A_MUTE
14 TRAY_MUTE
13 TRAY_DRV
12 TRV_I_SW
11 TRAY/TRV
10 CPU_CLK
09 CPU_STAT
08 CPU_CMD
07 A DIGITAL
06 GNG_D
05 B/Pb
04 R/Pr
03 G/Y
02 GNG IO
01 CVBS
PP6101
02 TRAY_SW(+)
01 GND_F
AV DECODER PCB
P8201
01 02 03 04 05 06
01 TRV-MOTOR +
02 TRV-MOTOR -
03 SPD-MOTOR +
04 SPD-MOTOR -
05 TRV-INNER-SW
06 TRV-INNER-SW
M
TRAY OPEN SWITCH
PS7501
12 KEY 4
11 KEY 3
10 KEY 2
09 KEY 1
08 KEY 0
07 GND_F
06 FRONT_R_IN
05 FRONT_L_IN
04 GND_IO
03 FRONT_V_IN
02 GND_IO
01 TIMEREC_H
FIP DP7501
⏻/I
12 11 10 09 08 07 06 05 04 03 02 01
PP4801
IR
FRONT JACK PCB
JK4801
FC7501
01 KEY4 01
02 KEY3 02
03 GND_F 03
FRONT SWITCH PCB

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
INTERCONNECTION DIAGRAM

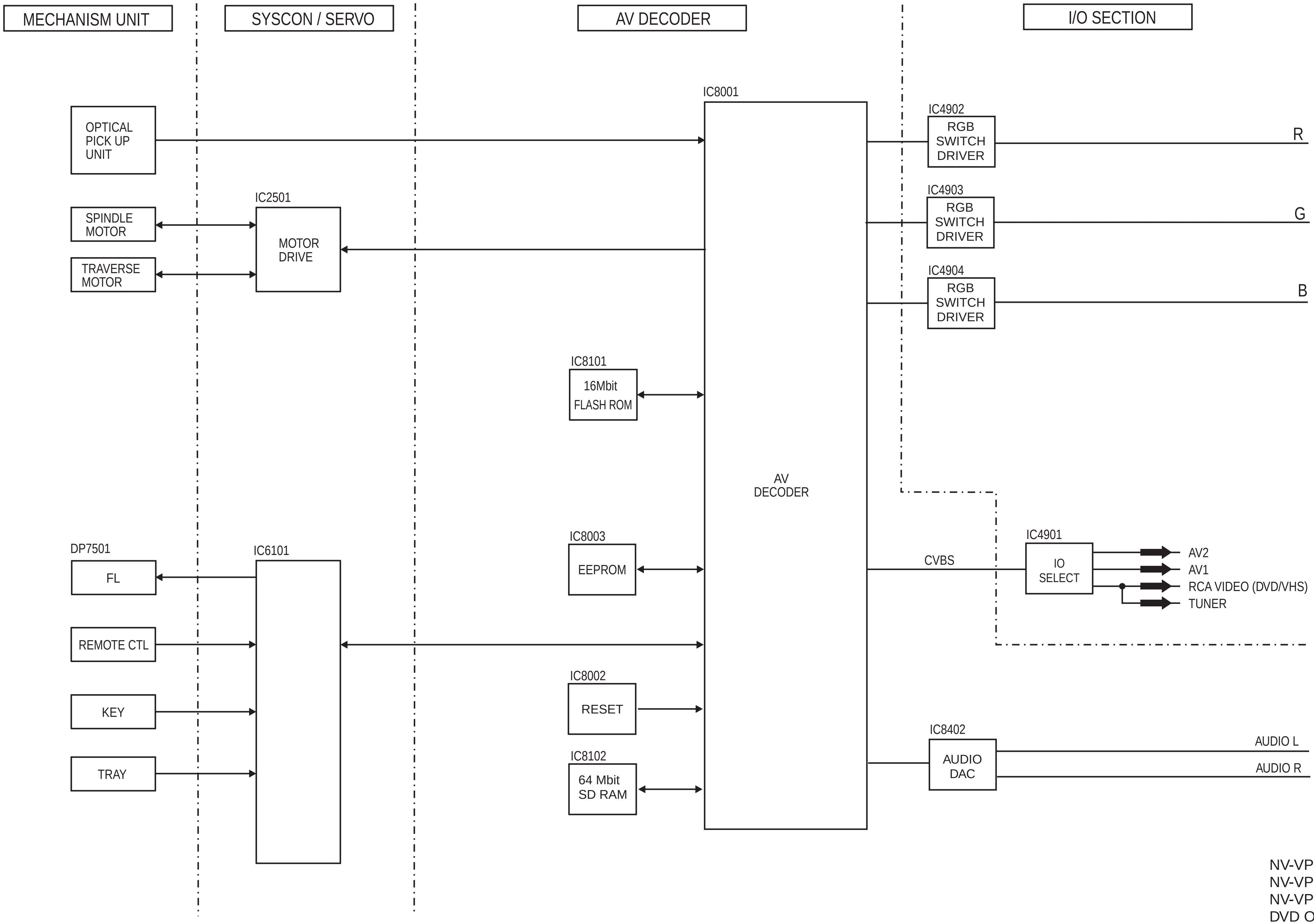


VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
IC4901
(INPUT/OUTPUT SELECT)
IIC BUS INTERFACE
DATA
2
CLOCK
3
V IN
[FROM OSD]
20
CLAMP
JK4903
4
JK4902
AV1(TV)
19
VIDEO OUT
20
VIDEO IN
V1 IN
36
CLAMP
JK4904
2
V3 IN
23
TU7601
6
V1 OUT
34
JK4902
AV2
(DECODER)
19
VIDEO OUT
V2 OUT
26
20
VIDEO IN
V2 IN
28
CLAMP
V OUT TO YC
18
TU7601
17
TUNER VIDEO
TU V IN
7
CLAMP
IC6001
OSD SIGNAL PROCESS
52
50
72
IIC DATA
71
IIC CLOCK
IC3001
IN
SEL
29
15
21
JK4801
7

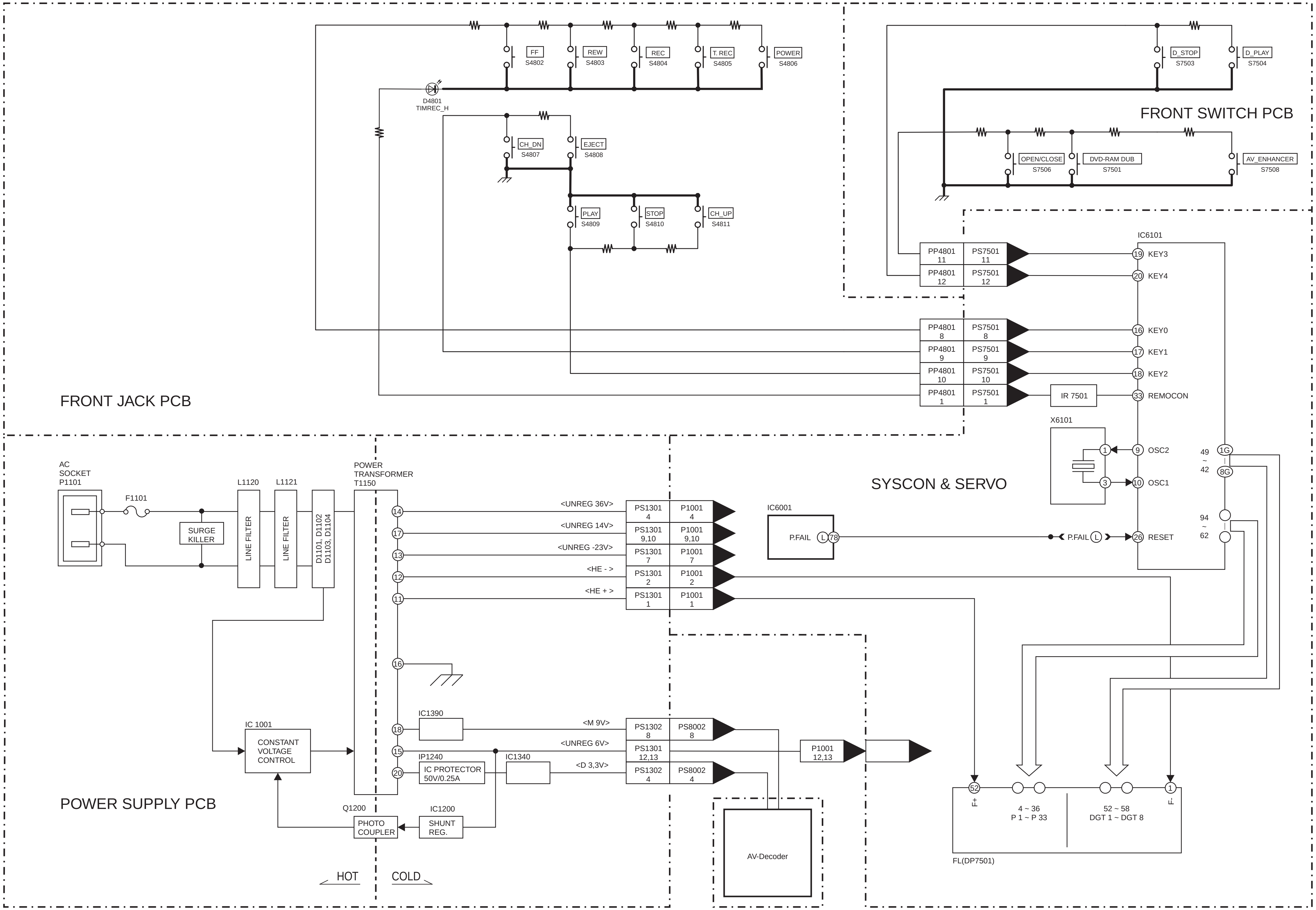
NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
VCR LUMINANCE & CHROMINANCE 1/2
BLOCK DIAGRAM


FROM
SS-SECTION
5 VID_FROM_YC
IC3001 (AUDIO/VIDEO SIGNAL PROCESSOR)
TO
IO-SECTION
6 V_OUT_TO_YC
JK4801
7
AV3_V_IN
PP4801
3
PS7501
3
ATT -6dB
ATT -4dB
ATT -10dB
ATT -10dB
ATT -10dB
VIDEO AGC
SVHS
SVHS
ATP
HPF
2MHz LPF
EXT
INT
ACC
CLEAR SYNC
FEED BACK CLAMP
VIDEO ALC
SQUELCH
NTSC/PAL CONVERTER
COLOUR KILLER
6dB AMP
C-SQUELCH
V-AMP
R(L SECAM)
MAIN CONV 2
MAIN CONV 1
C LPF2
VCA
C CCD
CCD LPF
PILOT ADD
BPF
B.D
PILOT ERASE
4.43PAL → MPAL CONV DELAY
C LPF1
GCL
Y-LPF
SECAM DELAY +SSEQ
SVHS+L SECAM
SVHS+L SECAM
NON-LINEAR DE-EMPHASIS
SQPB
SQPB EQ
R(SVHS)
R(SVHS)
DO/REC
DO
Y-NOISE REDUCTION
HP-NC TRAP-NC
PHASE COMPARATOR
DEH
NON-LINEAR EMPHASIS
APC SW
PB APC
KILLER
REC APC
ACC SW
ACC DET
CHROMA ACC DET
LPF
Y-CCD DELAY
ET LPF
REC FBC+ALC PB AGC+APL
CHROMA ACC
COLOUR KILLER
B.E
MIX LEVEL ADJUST
L SECAM
C-ACC:ON
L SECAM
THROUGH
fh HPF CTL TRAP
REC TRAP/ Hi-Fi TRAP
C-DELAY
NO FREC TRAP
FREC TRAP
L SECAM
L SECAM
L3002, C3005
PEAKING FILTER
MAIN DE-EMPHASIS
MAIN EMPHASIS CARRIER OFFSET W.C/D.C
fo/DEVIATION ADJUSTMENT
FM MODULATION
REC FILTER
REC MUTE
VCA
SP
SP
SUB LPF
DEMO
DLIM
G-EQ
X3001
X'TAL VCO OSCILLATOR
2FSC
SQPB
SQPB
SQPB DL
P-EQ
FM AGC
629MHz TRAP
C CLOCK DRIVER
TO C CCD
TO SYSCON
S-VHS DET H
S-VHS DET
SP2
SP2
CH2
CH1
SP1
SP1
SP L
SP COM
SP R
P5001 6
P5001 5
P5001 4
TO/FROM DD CYLINDER VIDEO HEAD
LP/EP L
LP/EP COM
LP/EP R
P5001 3
P5001 2
P5001 1
TO/FROM DD CYLINDER VIDEO HEAD
15
17
19
21
23
26
33
35
37
38
40
49
51
36
12
9
8
71
69
65
53
20
29
57
55
46
45
85
86
87
88
90
91

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
VCR LUMINANCE & CHROMINANCE 2/2
BLOCK DIAGRAM

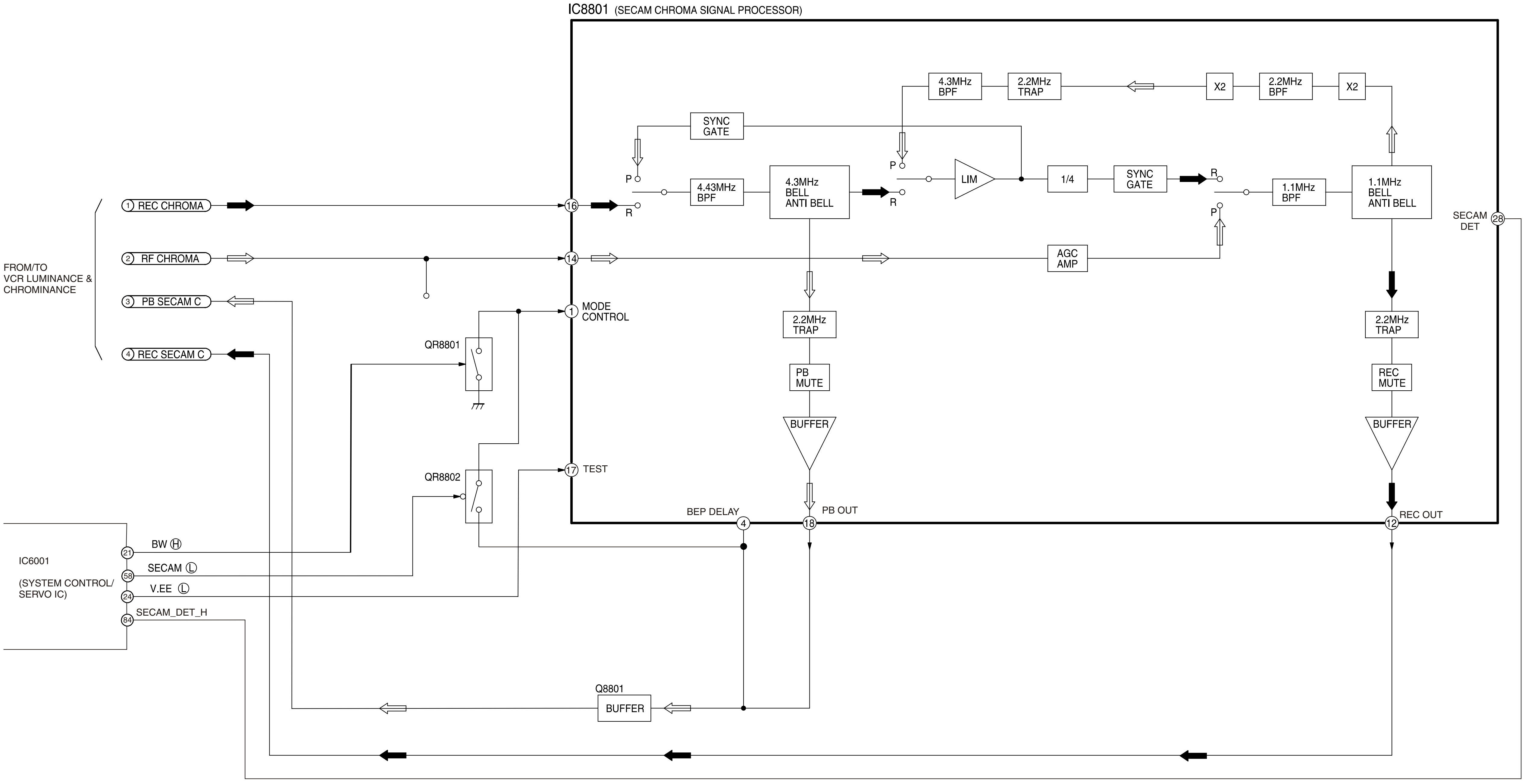

MECHANISM UNIT
SYSCON / SERVO
AV DECODER
I/O SECTION
OPTICAL PICK UP UNIT
IC2501
SPINDLE MOTOR
TRAVERSE MOTOR
MOTOR DRIVE
IC8001
AV DECODER
IC4902
RGB SWITCH DRIVER
R
IC4903
RGB SWITCH DRIVER
G
IC4904
RGB SWITCH DRIVER
B
IC8101
16Mbit FLASH ROM
IC8003
EEPROM
IC8002
RESET
IC8102
64 Mbit SD RAM
DP7501
FL
IC6101
REMOTE CTL
KEY
TRAY
CVBS
IC4901
IO SELECT
AV2
AV1
RCA VIDEO (DVD/VHS)
TUNER
IC8402
AUDIO DAC
AUDIO L
AUDIO R

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL
DVD OVERALL
BLOCK DIAGRAM

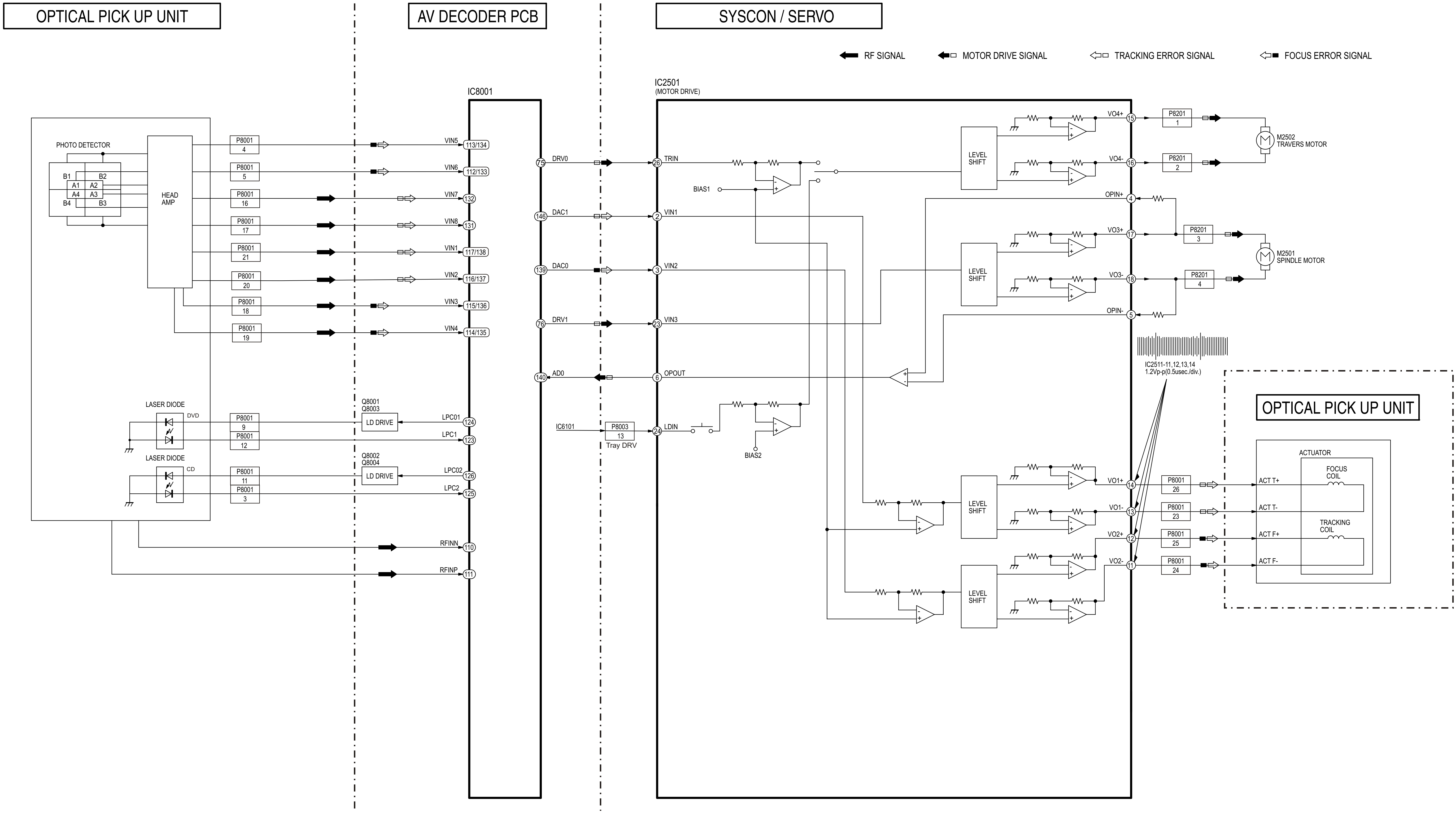

FF
S4802
REW
S4803
REC
S4804
T. REC
S4805
POWER
S4806
D4801
TIMREC_H
CH_DN
S4807
EJECT
S4808
PLAY
S4809
STOP
S4810
CH_UP
S4811
D_STOP
S7503
D_PLAY
S7504
FRONT SWITCH PCB
OPEN/CLOSE
S7506
DVD-RAM DUB
S7501
AV_ENHANCER
S7508
IC6101
PP4801 11
PS7501 11
19 KEY3
PP4801 12
PS7501 12
20 KEY4
PP4801 8
PS7501 8
16 KEY0
PP4801 9
PS7501 9
17 KEY1
PP4801 10
PS7501 10
18 KEY2
PP4801 1
PS7501 1
IR 7501
33 REMOCON
FRONT JACK PCB
X6101
1
9 OSC2
3
10 OSC1
49 ~ 42
1G
8G
94 ~ 62
SYSCON & SERVO
AC SOCKET P1101
F1101
SURGE KILLER
L1120
L1121
LINE FILTER
LINE FILTER
D1101, D1102 D1103, D1104
POWER TRANSFORMER T1150
14 <UNREG 36V>
PS1301 4
P1001 4
17 <UNREG 14V>
PS1301 9,10
P1001 9,10
13 <UNREG -23V>
PS1301 7
P1001 7
12 <HE - >
PS1301 2
P1001 2
11 <HE + >
PS1301 1
P1001 1
IC6001
P.FAIL L 78
P.FAIL L
26 RESET
16
IC 1001
CONSTANT VOLTAGE CONTROL
IC1390
18 <M 9V>
PS1302 8
PS8002 8
15 <UNREG 6V>
PS1301 12,13
P1001 12,13
IP1240
IC PROTECTOR 50V/0.25A
IC1340
20 <D 3,3V>
PS1302 4
PS8002 4
Q1200
PHOTO COUPLER
IC1200
SHUNT REG.
POWER SUPPLY PCB
HOT
COLD
AV-Decoder
52 F+
4 ~ 36 P 1 ~ P 33
52 ~ 58 DGT 1 ~ DGT 8
1 F-
FL(DP7501)

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
POWER PCB
BLOCK DIAGRAM

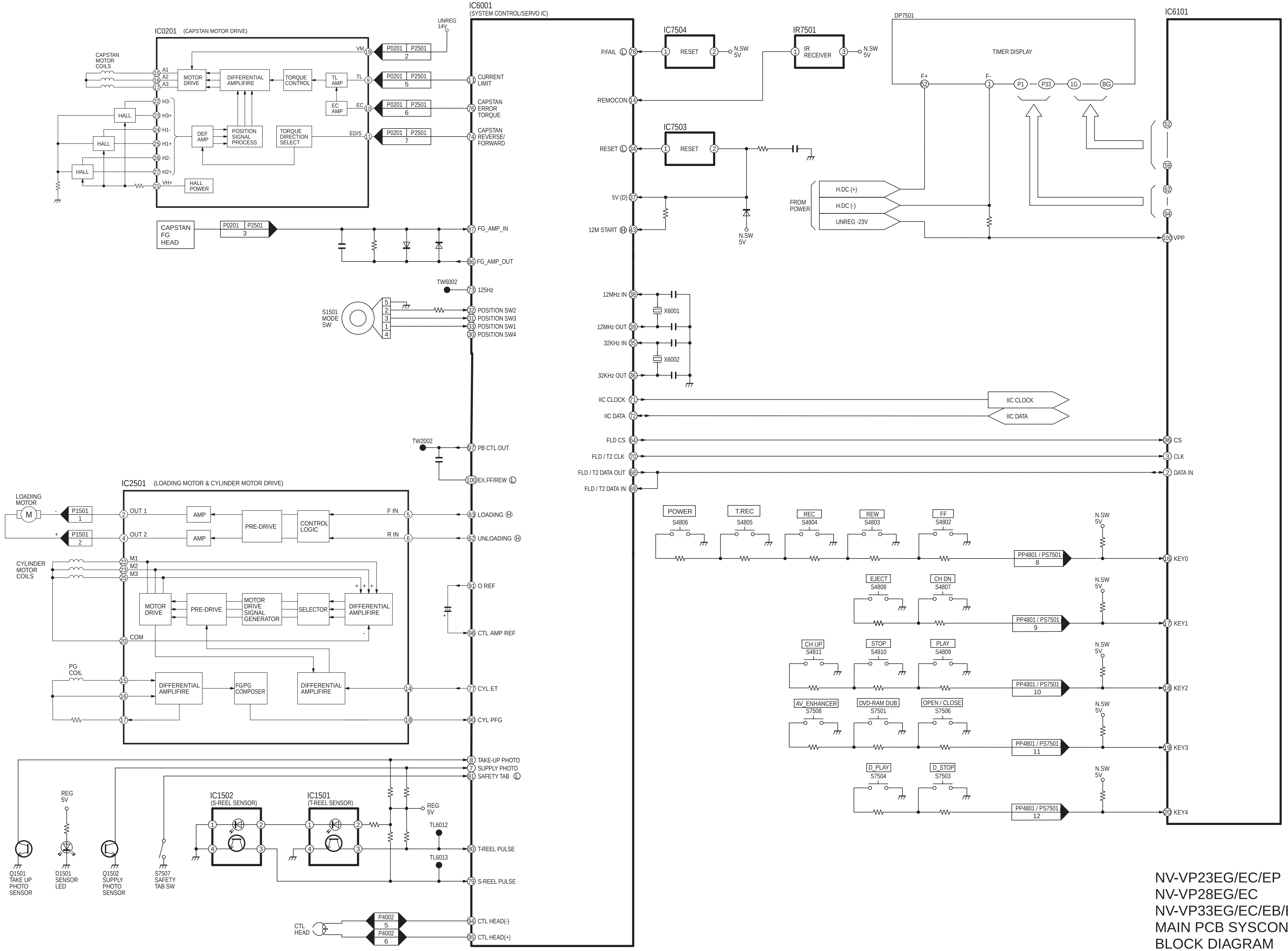
⬅ VIDEO MAIN SIGNAL PATH IN REC MODE
⇦ VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE


IC8801 (SECAM CHROMA SIGNAL PROCESSOR)
4.3MHz BPF
2.2MHz TRAP
X2
2.2MHz BPF
X2
SYNC GATE
P
R
4.43MHz BPF
4.3MHz BELL ANTI BELL
LIM
1/4
SYNC GATE
1.1MHz BPF
1.1MHz BELL ANTI BELL
SECAM DET
28
AGC AMP
FROM/TO VCR LUMINANCE & CHROMINANCE
1 REC CHROMA
2 RF CHROMA
3 PB SECAM C
4 REC SECAM C
16
14
1 MODE CONTROL
QR8801
QR8802
17 TEST
2.2MHz TRAP
PB MUTE
BUFFER
2.2MHz TRAP
REC MUTE
BUFFER
BEP DELAY
4
18 PB OUT
12 REC OUT
IC6001
(SYSTEM CONTROL/ SERVO IC)
21 BW Ⓗ
58 SECAM Ⓛ
24 V.EE Ⓛ
84 SECAM_DET_H
Q8801
BUFFER

NV-VP33EF
SECAM
BLOCK DIAGRAM

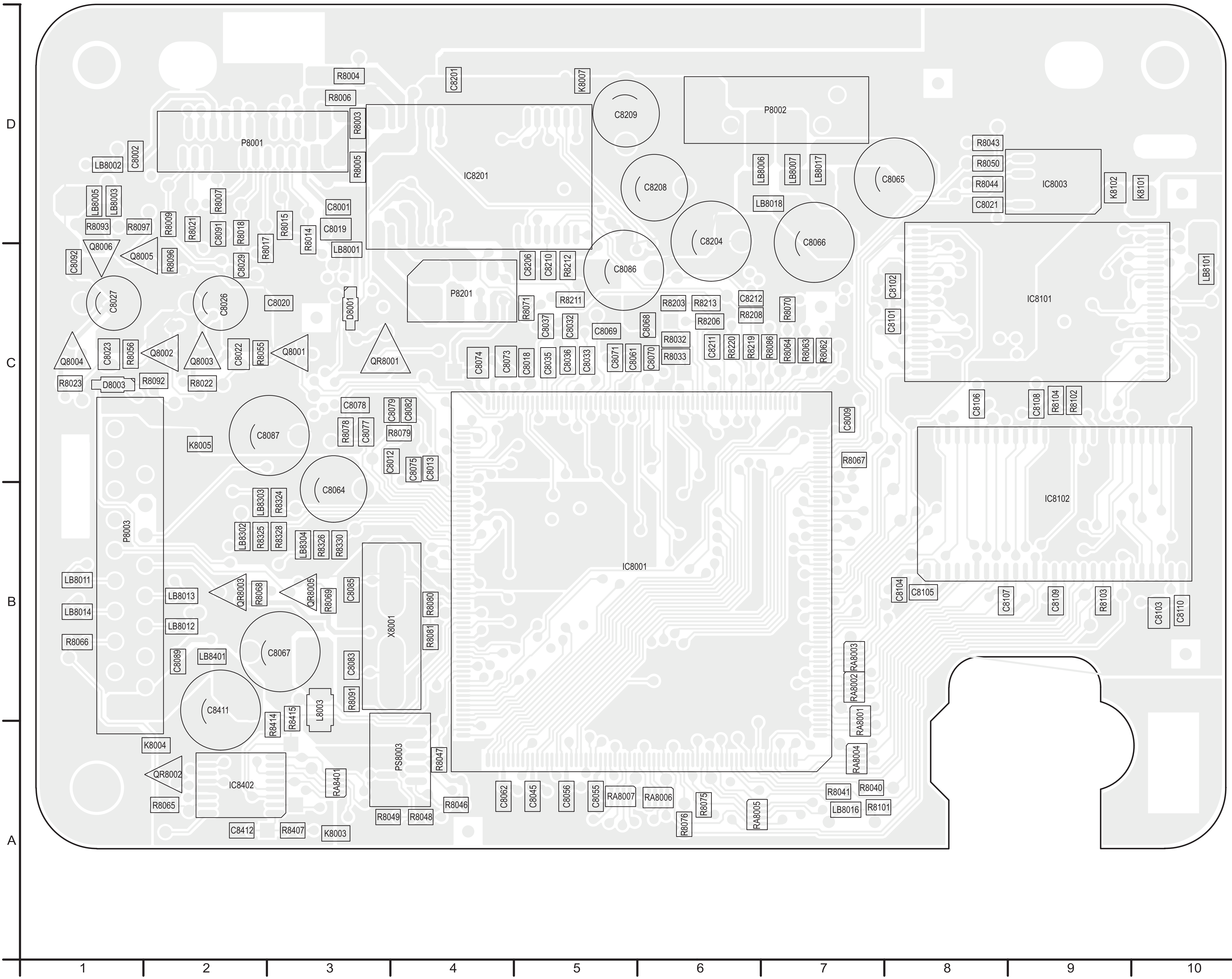

OPTICAL PICK UP UNIT
AV DECODER PCB
SYSCON / SERVO
RF SIGNAL
MOTOR DRIVE SIGNAL
TRACKING ERROR SIGNAL
FOCUS ERROR SIGNAL
IC8001
IC2501
(MOTOR DRIVE)
PHOTO DETECTOR
B1
B2
A1
A2
A4
A3
B4
B3
HEAD AMP
P8001 4
P8001 5
P8001 16
P8001 17
P8001 21
P8001 20
P8001 18
P8001 19
VIN5
VIN6
VIN7
VIN8
VIN1
VIN2
VIN3
VIN4
113/134
112/133
132
131
117/138
116/137
115/136
114/135
LASER DIODE
DVD
LASER DIODE
CD
P8001 9
P8001 12
P8001 11
P8001 3
Q8001
Q8003
Q8002
Q8004
LD DRIVE
LPC01
LPC1
LPC02
LPC2
124
123
126
125
RFINN
RFINP
110
111
75 DRV0
146 DAC1
139 DAC0
76 DRV1
140 AD0
IC6101
P8003 13
Tray DRV
26 TRIN
2 VIN1
3 VIN2
23 VIN3
6 OPOUT
24 LDIN
BIAS1
BIAS2
LEVEL SHIFT
VO4+ 15
VO4- 16
OPIN+ 4
VO3+ 17
VO3- 18
OPIN- 5
P8201 1
P8201 2
P8201 3
P8201 4
M2502
TRAVERS MOTOR
M2501
SPINDLE MOTOR
IC2511-11,12,13,14
1.2Vp-p(0.5usec./div.)
VO1+ 14
VO1- 13
VO2+ 12
VO2- 11
P8001 26
P8001 23
P8001 25
P8001 24
OPTICAL PICK UP UNIT
ACTUATOR
ACT T+
ACT T-
ACT F+
ACT F-
FOCUS COIL
TRACKING COIL

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DVD SERVO SECTION
BLOCK DIAGRAM


IC6001
(SYSTEM CONTROL/SERVO IC)
IC0201 (CAPSTAN MOTOR DRIVE)
UNREG 14V
CAPSTAN MOTOR COILS
A1
A2
A3
H3-
H3+
H1-
H1+
H2-
H2+
VH+
HALL
HALL
HALL
HALL POWER
MOTOR DRIVE
DIFFERENTIAL AMPLIFIRE
TORQUE CONTROL
TL AMP
EC AMP
DEF AMP
POSITION SIGNAL PROCESS
TORQUE DIRECTION SELECT
VM
TL
EC
ED/S
P0201
P2501
2
5
6
7
CURRENT LIMIT
CAPSTAN ERROR TORQUE
CAPSTAN REVERSE/ FORWARD
CAPSTAN FG HEAD
3
FG_AMP_IN
FG_AMP_OUT
TW6002
125Hz
S1501 MODE SW
POSITION SW2
POSITION SW3
POSITION SW1
POSITION SW4
TW2002
PB CTL OUT
EX.FF/REW Ⓛ
IC2501 (LOADING MOTOR & CYLINDER MOTOR DRIVE)
LOADING MOTOR
M
P1501
1
2
OUT 1
OUT 2
AMP
AMP
PRE-DRIVE
CONTROL LOGIC
F IN
R IN
LOADING Ⓗ
UNLOADING Ⓗ
CYLINDER MOTOR COILS
M1
M2
M3
COM
MOTOR DRIVE
PRE-DRIVE
MOTOR DRIVE SIGNAL GENERATOR
SELECTOR
DIFFERENTIAL AMPLIFIRE
O REF
CTL AMP REF
PG COIL
DIFFERENTIAL AMPLIFIRE
FG/PG COMPOSER
DIFFERENTIAL AMPLIFIRE
CYL ET
CYL PFG
TAKE-UP PHOTO
SUPPLY PHOTO
SAFETY TAB Ⓛ
REG 5V
IC1502 (S-REEL SENSOR)
IC1501 (T-REEL SENSOR)
REG 5V
TL6012
TL6013
T-REEL PULSE
S-REEL PULSE
Q1501 TAKE UP PHOTO SENSOR
D1501 SENSOR LED
Q1502 SUPPLY PHOTO SENSOR
S7507 SAFETY TAB SW
CTL HEAD
P4002
5
6
CTL HEAD(-)
CTL HEAD(+)
P.FAIL Ⓛ
REMOCON
RESET Ⓛ
5V (D)
12M START Ⓗ
IC7504
RESET
N.SW 5V
IR7501
IR RECEIVER
N.SW 5V
IC7503
RESET
N.SW 5V
12MHz IN
12MHz OUT
32KHz IN
32KHz OUT
X6001
X6002
IIC CLOCK
IIC DATA
FLD CS
FLD / T2 CLK
FLD / T2 DATA OUT
FLD / T2 DATA IN
DP7501
TIMER DISPLAY
F+
F-
P1
P33
1G
8G
FROM POWER
H.DC (+)
H.DC (-)
UNREG -23V
IC6101
VPP
IIC CLOCK
IIC DATA
CS
CLK
DATA IN
POWER S4806
T.REC S4805
REC S4804
REW S4803
FF S4802
EJECT S4808
CH DN S4807
CH UP S4811
STOP S4810
PLAY S4809
AV_ENHANCER S7508
DVD-RAM DUB S7501
OPEN / CLOSE S7506
D_PLAY S7504
D_STOP S7503
N.SW 5V
PP4801 / PS7501
8
9
10
11
12
KEY0
KEY1
KEY2
KEY3
KEY4

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
MAIN PCB SYSCON & SERVO
BLOCK DIAGRAM

(REPD0011A)

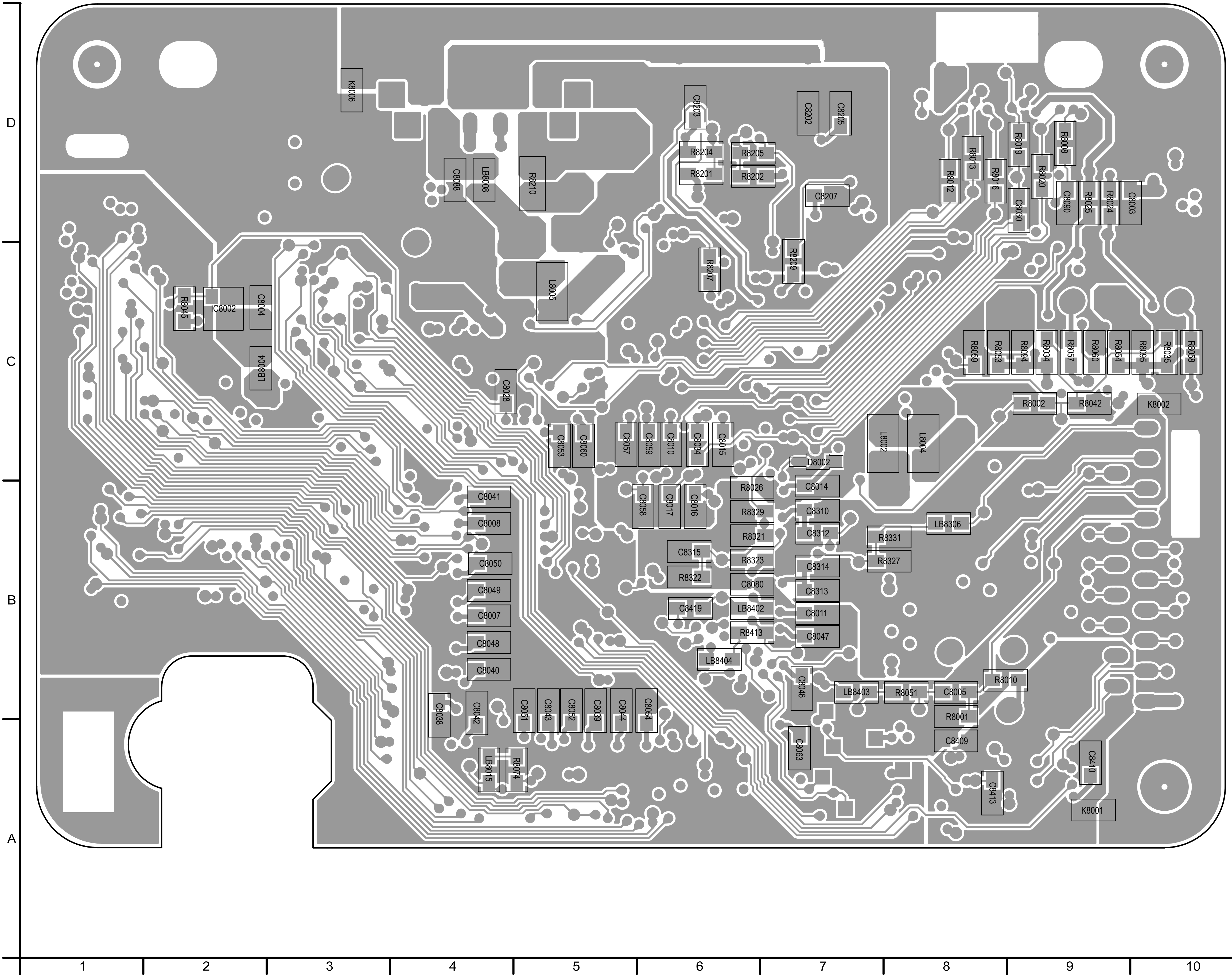

D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
R8004
R8006
C8201
K8007
C8209
P8002
R8003
P8001
IC8201
R8005
LB8002
C8002
C8208
LB8006
LB8007
LB8017
C8065
R8043
R8050
R8044
C8021
IC8003
K8102
K8101
LB8005
LB8003
R8007
C8001
LB8018
C8204
C8066
R8093
R8097
R8009
R8021
C8091
R8018
R8015
R8014
C8019
LB8001
Q8006
Q8005
C8092
R8096
C8029
R8017
C8206
C8210
R8212
C8086
IC8101
LB8101
C8102
C8101
P8201
R8071
R8211
R8203
R8213
C8212
R8208
R8070
C8027
C8026
C8020
D8001
R8206
C8037
C8032
C8069
C8068
R8032
R8033
Q8004
C8023
R8056
Q8002
Q8003
C8022
R8055
Q8001
QR8001
C8074
C8073
C8018
C8035
C8036
C8033
C8071
C8061
C8070
C8211
R8220
R8219
R8086
R8064
R8063
R8062
R8023
D8003
R8092
R8022
C8078
C8079
C8082
C8087
R8078
C8077
R8079
C8009
C8106
C8108
R8104
R8102
K8005
C8012
C8075
C8013
R8067
C8064
IC8102
LB8303
R8324
P8003
LB8302
R8325
R8328
LB8304
R8326
R8330
IC8001
LB8011
LB8013
QR8003
R8068
QR8005
R8069
C8085
X8001
R8080
R8081
C8104
C8105
C8107
C8109
R8103
C8103
C8110
LB8014
LB8012
R8066
C8089
LB8401
C8067
C8083
RA8003
RA8002
C8411
R8414
R8415
L8003
C8091
RA8001
PS8003
R8047
RA8004
K8004
QR8002
IC8402
RA8401
C8062
C8045
C8056
C8055
RA8007
RA8006
R8075
R8041
R8040
R8065
R8046
RA8005
LB8016
R8101
R8049
R8048
R8076
C8412
R8407
K8003

DECODER PCB	
IC8001	B5
IC8003	D9
IC8101	C9
IC8102	B9
IC8201	D5
IC8402	A2
Q8001	C3
Q8002	C2
Q8003	C2
Q8004	C1
Q8005	C1
Q8006	C1
QR8001	C3
QR8002	A2
QR8003	B2
QR8005	B3
P8001	D2
P8002	D7
P8003	B1
P8201	C4
PS8003	A4
X8001	B3

ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DECODER PCB
COMPONENT SIDE

(REPD0011A)

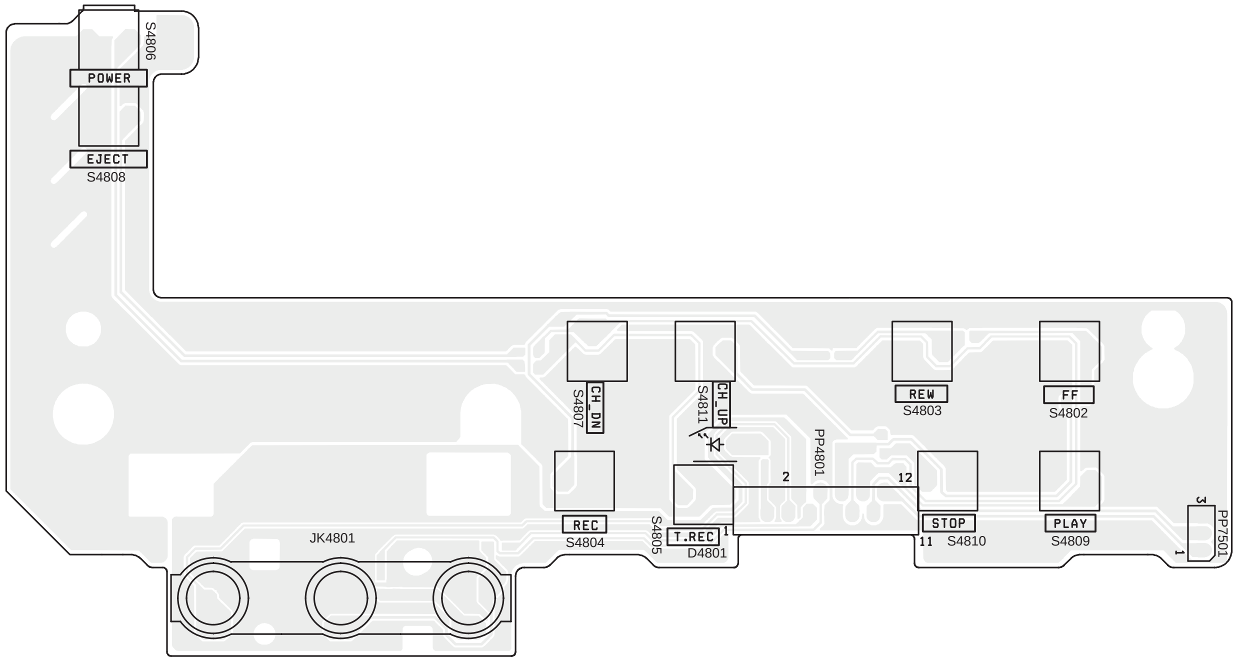

D
C
B
A
1
2
3
4
5
6
7
8
9
10
K8006
C8203
C8202
C8205
R8204
R8205
R8201
R8202
C8207
C8088
LB8008
R8210
R8209
R8207
L8005
R8045
IC8002
C8004
LB8004
C8028
R8013
R8019
R8008
R8012
R8016
R8020
C8030
C8090
R8025
R8024
C8003
R8059
R8053
R8094
R8034
R8057
R8060
R8054
R8095
R8035
R8058
R8002
R8042
K8002
L8002
L8004
D8002
C8053
C8060
C8057
C8059
C8010
C8034
C8015
C8041
C8008
C8050
C8049
C8007
C8048
C8040
C8058
C8017
C8016
R8026
R8329
R8321
R8323
C8080
LB8402
R8413
C8315
R8322
C8419
C8014
C8310
C8312
C8314
C8313
C8011
C8047
R8331
R8327
LB8306
LB8404
C8046
LB8403
R8051
C8005
R8010
R8001
C8409
C8063
C8038
C8042
C8051
C8043
C8052
C8039
C8044
C8054
LB8015
R8074
C8410
C8413
K8001
11
12

DECODER PCB	
IC8002	C2

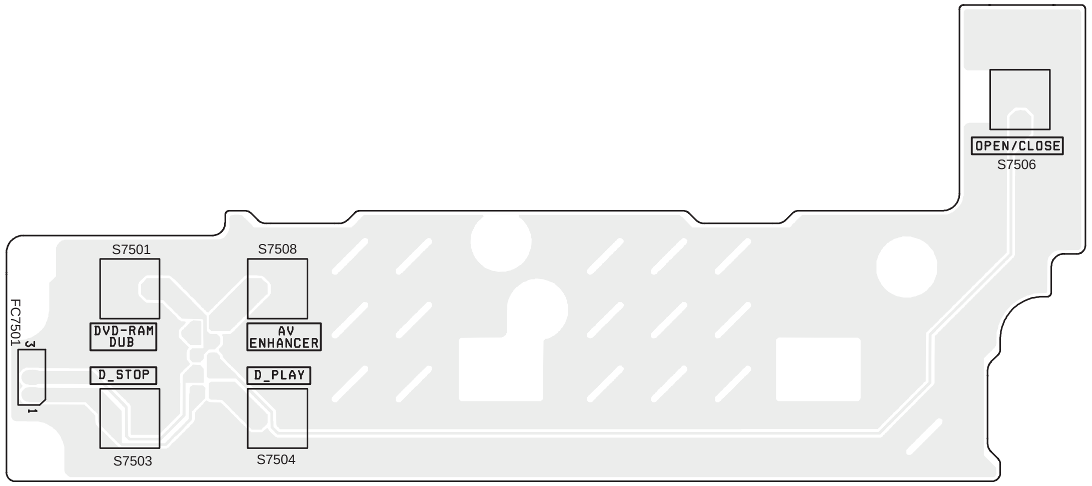
ADDRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
DECODER PCB
SOLDER SIDE

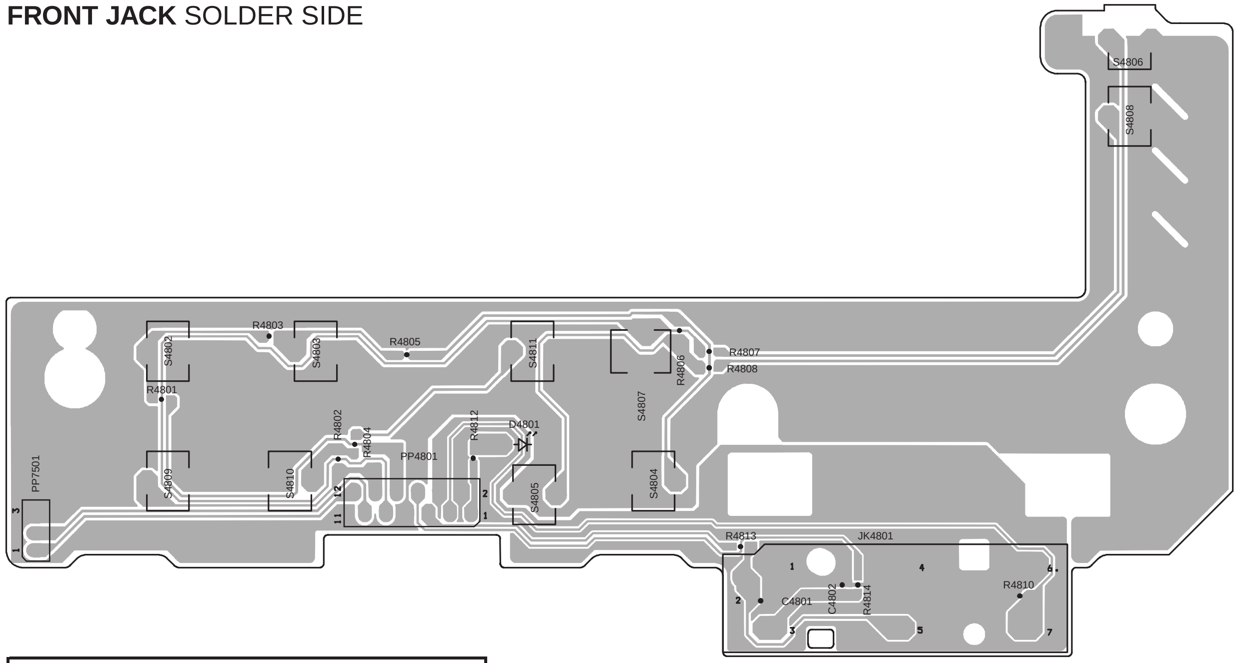
FRONT JACK COMPONENT SIDE (REPD0014A)


S4806
POWER
EJECT
S4808
CH_DN
S4807
CH_UP
S4811
PP4801
REW
S4803
FF
S4802
2
12
REC
S4804
S4805
T.REC
D4801
1
STOP
11
S4810
PLAY
S4809
3
PP7501
1
JK4801

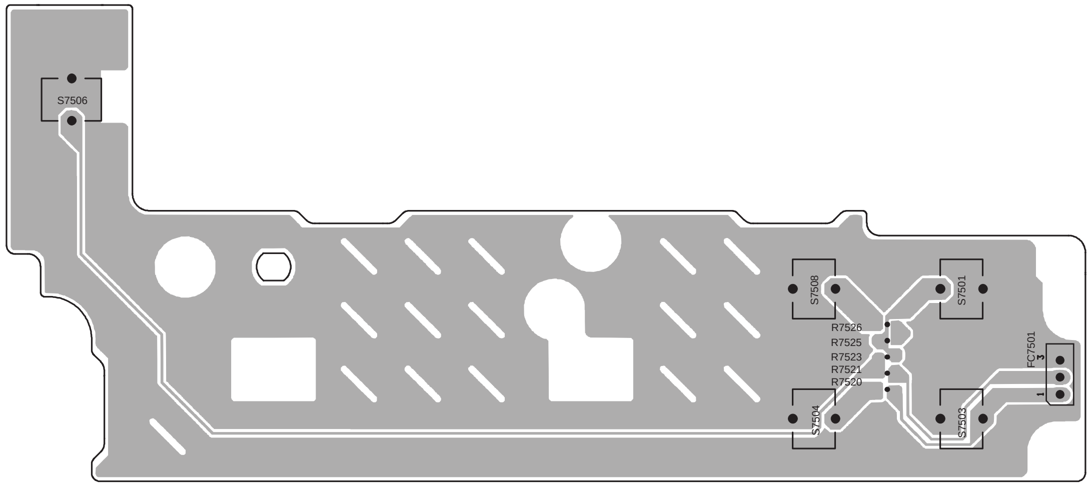
FRONT SWITCH COMPONENT SIDE (REPD0013A)


OPEN/CLOSE
S7506
S7501
S7508
FC7501
3
1
DVD-RAM DUB
AV ENHANCER
D_STOP
D_PLAY
S7503
S7504

FRONT JACK SOLDER SIDE


S4806
S4808
R4803
R4805
S4802
S4803
S4811
R4807
R4808
R4806
R4801
S4807
R4802
R4804
R4812
D4801
PP4801
PP7501
S4809
S4810
12
11
2
1
S4805
S4804
3
1
R4813
JK4801
1
4
6
R4810
2
C4801
C4802
R4814
3
5
7

FRONT SWITCH SOLDER SIDE


S7506
S7508
S7501
R7525
R7525
R7523
R7521
R7520
FC7501
3
1
S7504
S7503

FRONT JACK PCB					
	Component	Solder		Component	Solder
JK4801	B2	B1	S4806	D1	C6
PP4801	C4	B3	S4807	C4	B4
PP7501	C6	B1	S4808	D1	B6
S4802	C6	B2	S4809	C6	B1
S4803	C5	B2	S4810	C5	B2
S4804	C4	B4	S4811	C4	B3
S4805	C4	B3			

ADRESS INFORMATION

FRONT SWITCH PCB		
	Component	Solder
FC7501	C7	B11
S7501	C7	B11
S7503	C7	B11
S7504	C8	B10
S7506	D11	B7
S7508	C8	B10

ADRESS INFORMATION

NV-VP23EG/EC/EP
NV-VP28EG/EC
NV-VP33EG/EC/EB/EBL/EP
FRONT JACK PCB / FRONT SWITCH PCB
COMPONENT SIDE / SOLDER SIDE

D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12

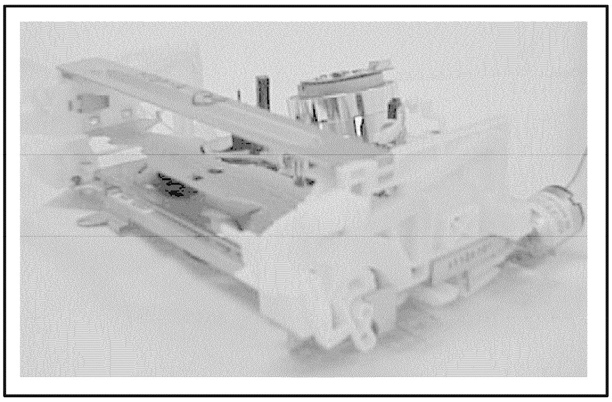
Order No.VRD0202010C8

Service Manual

Video Cassette Recorder

R4-MECHANISM-CHASSIS

Panasonic VHS



SPECIFICATIONS

INRTODUCTION

The R4-Mechanism chassis are built in several Panasonic VHS Video Cassette Recorders from year 2002.

CONTENTS

1.OUT LINE OF R4 MECHANISM..…………………………………………………………………..…..3

1-1.DIFFERENCE BETWEEN Z-MECHANISM AND R4-MECHANISM..…………………………..… 3

1-2.THE TAPE TRANSPORT PATH...………………………………………………………..…..3

1-3.PARTS NAME OF R4 MECHANISM.…………………………………………………………..4

1-4.NEW DD CYLINDER UNIT.……………………………………………………………….… 6

1-5.PG SHIFTER AUTOMATIC ADJUSTMENT.…………………………………………………… 7

2.REMOVAL OF CASSETTE TAPE……………………………………………………………..……..9

3.REMOVAL OF CASSETTE HOLDER UNIT & MECHANISM CHASSIS.……………………….…11

3-1.REMOVAL OF MECHANNISM CHASSIS UNIT..……………………………………………11

3-2.REMOVAL OF CASSETTE HOLDER UNIT..…………………………………………….…11

4.DISASSEMBLY/ASSEMBLY METHOD FOR MECHANISM ………………………………………12

4-1.DISASSEMBLY OF MECHANISM.……………………………………………………………...12

4-2.ASSEMBLY AND PHASE ADJUSTMENT OF MECHANISM..………………………………16

5.MECHANICAL ADJUSTMENT PROCEDURE.…………………………………………………....25

5-1.P2 AND P3 POST ADJUSTMENT (PREADJUSTMENT)……..…………………..….……………25

5-2.TAPE INTERCHANGEABILITY ADJUSTMENT..………………………………………………...25

Servicing Fixture and Tools……………………………………………………………………….…30

6.SERVICE INFORMATION DISPLAY …………………………………………………………....31

7.SELF – DIAGNOSIS INDICATION DISPLAY ………………………..…………………….……33

7-1. TABLE OF DETECTING CONDITION AND MOVEMENT OF MECHANISM IN DETECTION OF THE SELF-DIAGNOSIS FUNCTION.….…..35

7-2. MEMORY OF THE SELF-DIAGNOSIS HISTORY AND THE SUPPLEMENTARY DATA……...39

7-3.CHANGE OF MEMORY TIMINGFOR ERROR NO. F03 AND F04..……………………...……41

7-4.ANALIZING PROCEDURE FOR MECHANISM ERROR.……………………..……………41

8.TEST MODE……………………………………………………………………………………….44

9.TIMING CHART OF MODE SW……………………………………………………………...…44

10.SYSTEM CONTROL CIRCUIT ……………………………………………………………….45

10-1. MODE TRANSITION..……………………………………………… ……………………45

10-2. BASIC ACTION IN MECHANISM.………………………………………………………46

10-3. SUPPLY AND TAKE-UP SENSORS…………… ……………………………………….…47

10-4. SAFETY TAB SWITCH…………………………………………………………………48

10-5. DEW SENSOR……………………………………………………………………………..48

10-6. SAFETY TIMER..……………………………………………………………………….48

11.MOTOR DRIVE SECCTION..……………………………………………………………….51

11-1. CAPSTAN DRIVE CIRCUIT.………………………………………………………………..51

11-2. CYLINDER DRIVE AND LOADING MOTOR DRIVE CIRCUIT.……………………….……53

1. OUTLINE OF R4 MECHANISM

1-1.DIFFERENCE BETWEEN Z-MECHANISM AND R4-MECHANISM

Item	Z-Mechanism	R4-Mechanism
Frame	The sheet metal frame	The sheet metal frame. The mechanism Spacer (R) & (L) for mechanism mounting are added.
Rear Panel	ABS plastic	Sheet metal
Front Panel Unit	Standard	Removal of the front panel becomes easy because of decreasing the hooking portions.
Pieces of the Components	175 pieces	125 pieces
DD Cylinder	Corresponding heads: 2 ~ 6ch Weight: 100%	Corresponding heads: 2 ~ 10ch Weight: 76%
FF/REW speed	360 times	600 / 400 times
Area size of mechanism	100%	97%
Capstan drive IC, Cylinder drive IC, Loading motor drive IC	Standard	All new ICs
Capstan Unit	Whole wave/Half wave Drive	PWM Drive
Cylinder Unit	New GLDD or UDD	RDD
Tape transport path	Standard	same as Z mechanism
Phase adjustment place	7 places	5 places
Slot in unit	Slide rack drive	Sector gear drive

1-2.THE TAPE TRANSPORT PATH

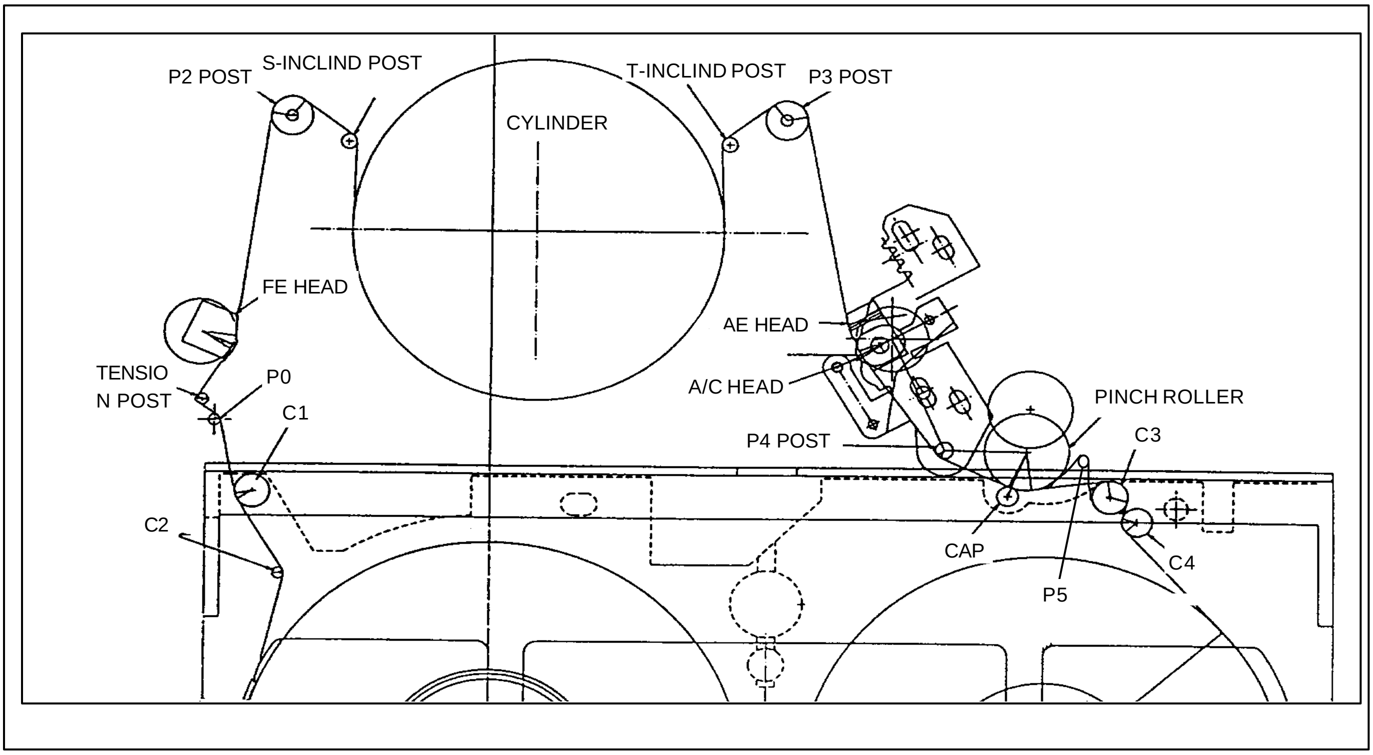

P2 POST
S-INCLIND POST
T-INCLIND POST
P3 POST
CYLINDER
FE HEAD
AE HEAD
A/C HEAD
TENSION POST
P0
C1
P4 POST
PINCH ROLLER
C3
C2
CAP
C4
P5

Fig.M1

1-3.PARTS NAME OF R4-MECHANISM

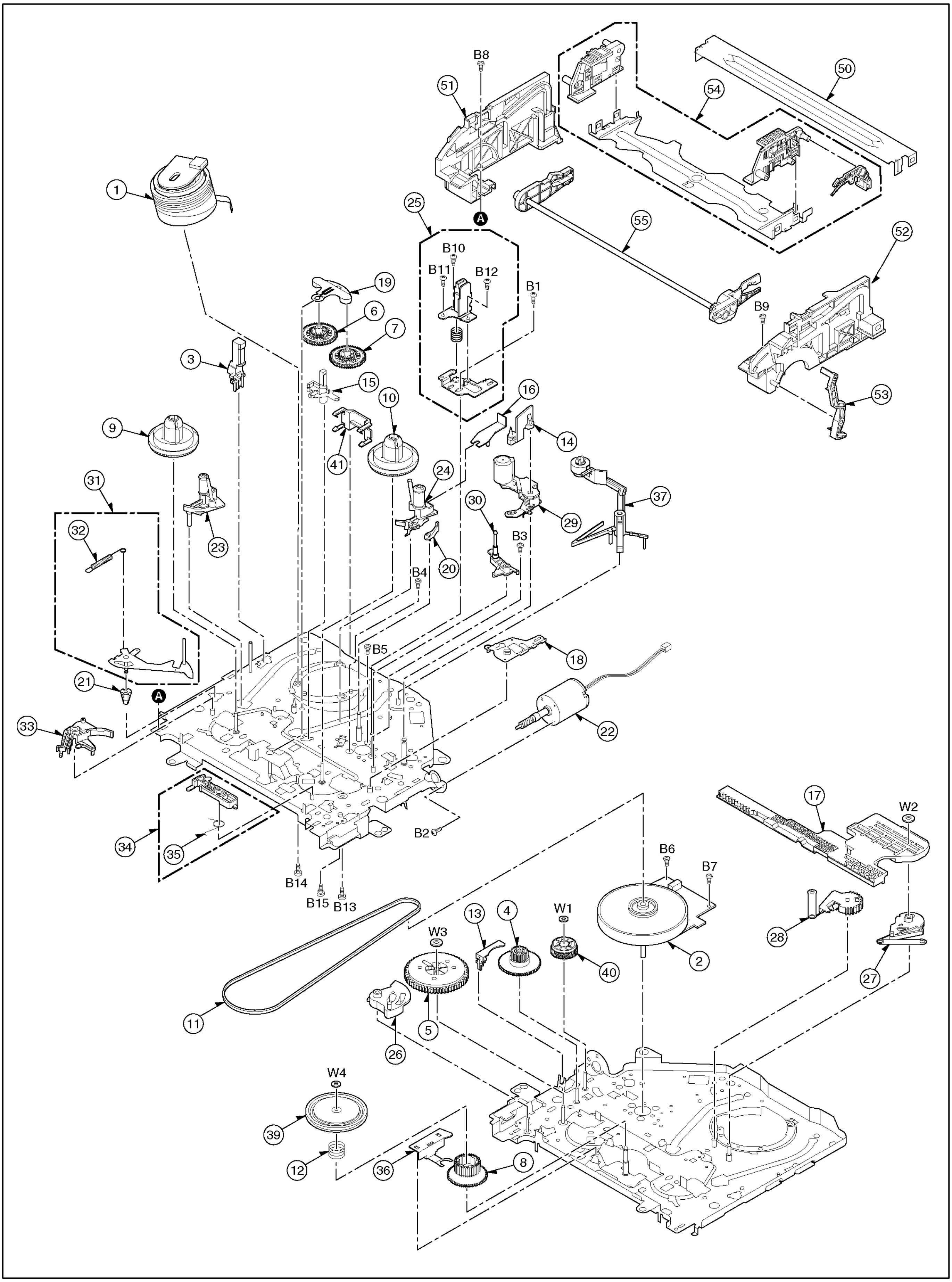

B8
51
50
54
1
25
A
55
52
B10
B11
B12
B1
19
6
7
B9
3
15
10
53
9
41
16
14
24
37
31
30
29
23
32
B3
20
B4
B5
18
21
A
22
33
17
W2
B2
34
35
B6
B7
B14
B15
B13
13
4
W1
28
W3
2
40
27
5
11
26
W4
39
12
36
8

Fig.M2

Ref. No.	Part Name
1	CYLINDER UNIT
2	CAPSTAN UNIT
3	FE HEAD
4	INTERMEDIATE GEAR
5	MAIN CAM GEAR
6	IDLER GEAR
7	IDLER GEAR
8	CHANGE GEAR
9	REEL TABLE
10	REEL TABLE
11	CAPSTAN BELT
12	CHANGE GEAR SPRING
13	WORM SHAFT HOLDER
14	OPENER PIECE
15	LED PRISM
16	TAPE GUIDE
17	MAIN LEVER
18	PINCH CHARGE ARM
19	IDLER ARM
20	P4 CAP
21	TENSION ARM BOSH
22	LOADING MOTOR UNIT
23	SUPPLY SHAFT HOLDER UNIT
24	TAKE UP SHAFT HOLDER UNIT
25	AC HEAD UNIT
26	SECTOR GEAR UNIT
27	SUPPLY LOADING ARM UNIT
28	TAKE UP LOADING ARM UNIT
29	PINCH ARM UNIT
30	P5 ARM UNIT
31	TENSION ARM UNIT
32	TENSION SPRING
33	SUPPLY BRAKE ARM UNIT
34	TAKE UP BRAKE ARM UNIT
35	TAKE UP BRAKE SPRING
36	CHANGE LEVER UNIT
37	CLEANER ARM UNIT
39	CENTRE CLUTCH UNIT
40	TORQUE CLUTCH UNIT
41	FLAT CABLE HOLDER
50	TOP PLATE
51	SIDE PLATE (L)
52	SIDE PLATE ® UNIT
53	OPENER LEVER
54	CASSETTE HOLDER UNIT
55	MAIN SHAFT UNIT

Ref. No.	Part Name
B1	SCREW
B2	SCREW
B3	SCREW
B4	SCREW
B5	SCREW
B6	SCREW
B7	SCREW
B8	SCREW
B9	SCREW
B10	SCREW
B11	SCREW
B12	SCREW
B13	SCREW
B14	SCREW
B15	SCREW
W1	WASHER
W2	WASHER
W3	WASHER
W4	WASHER

1-4. NEW DD CYLINDER UNIT

Three phases sensor-less RDD system instead of Matsushita original GLDD/UDD system is adopted for standardization.

- **NOTE:**

Replacing only Upper Cylinder unit of RDD cannot be performed, as securing of RT gap is impossible in a place other than factory, replace the cylinder as a whole RDD Cylinder Unit. The PG Shifter Adjustment shown in item 1-3 should be performed after replacement of the DD Cylinder.

FEATURE

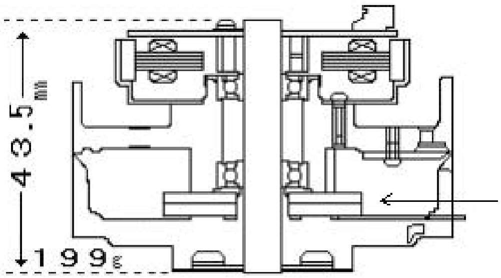
1. The RDD corresponds to 2 ~ 10 Heads.
2. Thickness of Upper Cylinder and Lower Cylinder becomes thin.
3. Adoption of standard parts in the VTR world.
4. Miniaturization of the Rotary Transformer.

	Rotary Transformer of UDD	Rotary Transformer of RDD
Inner Diameter	ϕ18.5	ϕ8.3
Outer Diameter	ϕ47.6	ϕ32.3
Thinness	t=2.70	t=1.85
Total Parts Pieces of the Motor	62	56

(*Rotary Transformer which is corresponding to 6 Heads)

RDD

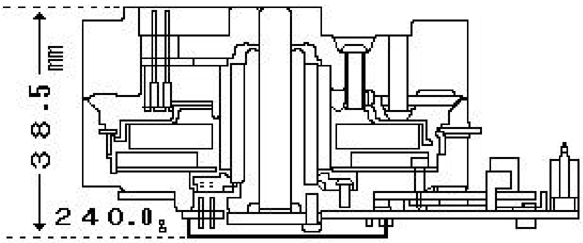
Drive System: 3 Phases Full Wave Sensor-less



NEW GLDD

UDD

Drive System: 3Phase Half Wave P Signal-less



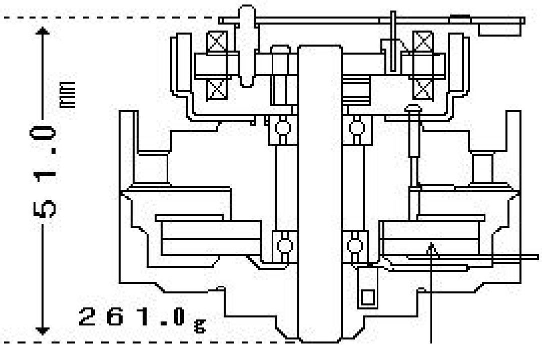


Fig.M3

1-5. PG SHIFTER AUTOMATIC ADJUSTMENT

The PG Shifter Adjustment is performed automatically on this VCR.
The PG Shifter Adjustment should be performed after replacement of the DD Cylinder, System Control Microprocessor and Main C.B.A.

1-5-(1). ADJUSTMENT PROCEDURE

PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	0 00 00
Activate the Service Mode 2 2.While keep pressing FF key, press the EJECT key in twice.	2 00 00
Activate the Entering Mode. 3.Press the EJECT key for more than 3 seconds.	2 00
Set the Mode 2. 4.Press the CH UP key once.	2 1 00
Insert the alignment cassette tape (VFJ8125H3F:PAL/SECAM) **(VFM8080HQFP: NTSC)** 5.The PG Shifter Adjustment starts automatically.	2 1 00
When the sequence of the automatic adjustment has been terminated, the following action has been made. ● **SUCCEED: The cassette tape is ejected.** ● **ERROR: The "F20", "F21", "F22" or "F23" is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.**	
Exit from Service Mode. 6. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	10 : 00 (Normal Indication)

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

NOTE:

After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

1-5-2. X-VALUE and LINEARITY (P2 and P3 Posts) ADJUSTMENT

1. Set the Auto Tracking to off.
   (1) Press the FF key and the EJECT key simultaneously for more than 3 seconds.
   (2) While keep pressing FF key, press the EJECT key in twice.
2. Perform the X-VALUE ADJUSTMENT
   (1) Turn the Auto-Tracking to off and set the tracking to center fixing position.
   (2) Playback the alignment Tape and adjust the X-Value so that the envelope becomes maximum as described on item 5-2. Tape Interchangeability Adjustment in Section 5.MECHANICAL ADJUSTMENT PROCEDURE.

Alignment Tape	VFJ8125H3F (PAL)
	VFM8080HQFP (NTSC)
Test Point of Playback Envelope	TW3001

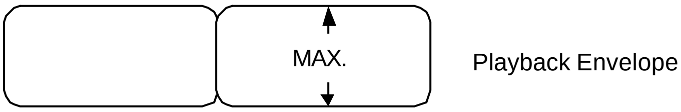


Fig.M4

3. Perform the LINEARITY ADJUSTMENT
   (1) Turn the Auto-Tracking to off and set the tracking to center fixing position.
   (2) Playback the alignment Tape and adjust the LINEARITY so that the envelope becomes flat by tracking (+) and (-) switches.

Alignment Tape	VFJ8125H3F (PAL)
	VFM8080HQFP (NTSC)
Test Point of Playback Envelope	TW3001

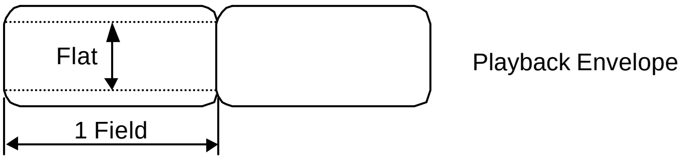


Fig.M5

- Main symptoms and Adjustment point

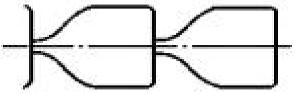
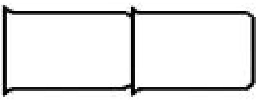
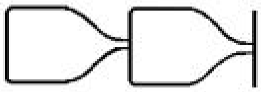
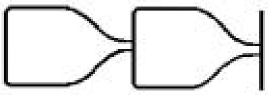
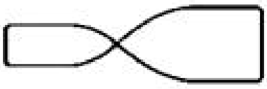
Envelope	Post Name		Adjustment Method
	P2 Post ↺		Turn P2 Post counter-clockwise (Approx. 1/2 revolution)
	P2 Post ↻		Turn P2 Post clockwise (Approx. 1/4 revolution)
	P3 Post ↻		Turn P3 Post clockwise (Approx. 1/2 revolution)
	P3 Post ↺		Turn P3 Post counter-clockwise (Approx. 1/4 revolution)
	P2 Post ↻	P3 Post ↺	Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1revolution)

Fig.M6

2. REMOVAL OF CASSETTE TAPE

When the cassette tape could not be ejected from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.
   a. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.
   b. Press STOP button in order to unload the mechanism. (Pay attention of tape slack)
   Service Mode Indication:
   7 ** ** (STOP) → 7 0L ** (EJECT)
2. Removal by manual operation by rotating the Loading Motor with the batteries.
   a. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring the Disassembly Procedures.
   b. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor following Fig. S2.

ONNECTION for UNLOADING

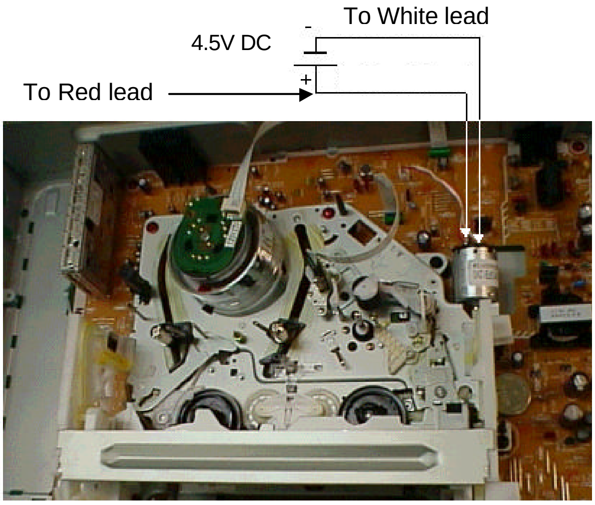


Fig.S2

   c. Stop unloading just before unloading would be completed as shown in Fig.S3.

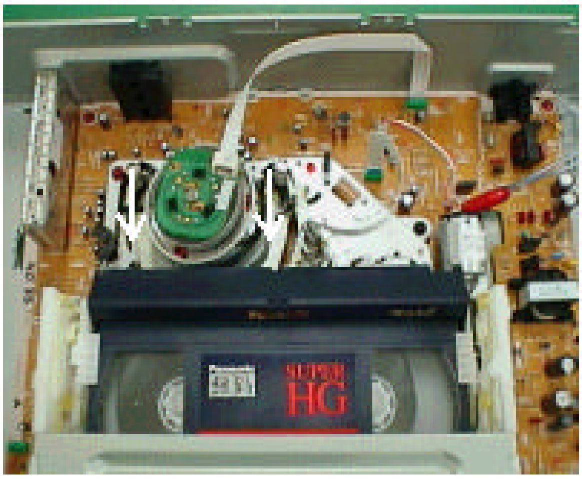


Fig.S3

   d. Then the tape becomes slack as shown in Fig.S4.

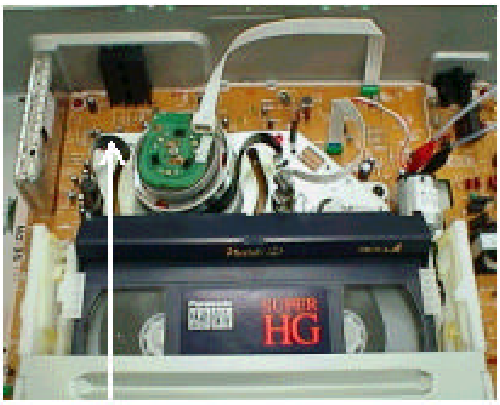


Fig.S4

   e. Rotate the S-Reel by a small minus screwdriver (Fig.S5) to remove the tape slacks as shown in Fig.S6.

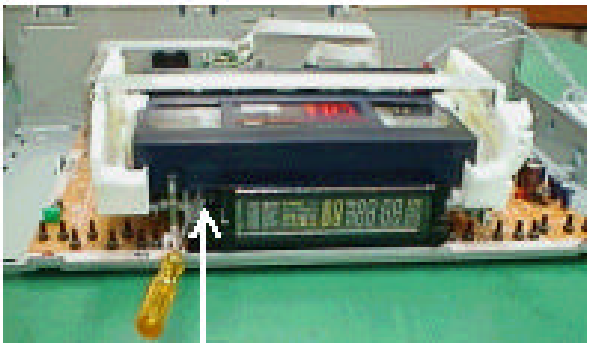


Fig.S5

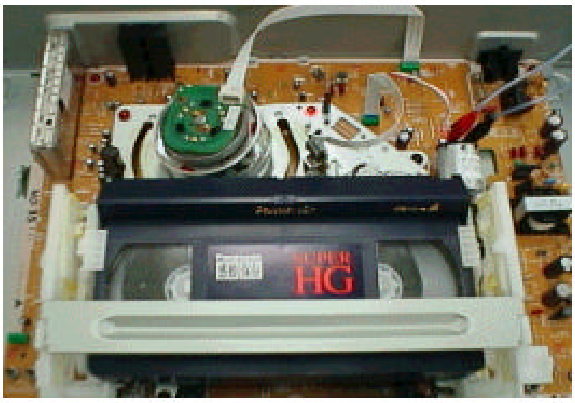


Fig.S6

f. Then unload again to remove the cassette tape as shown in Sig.S7.

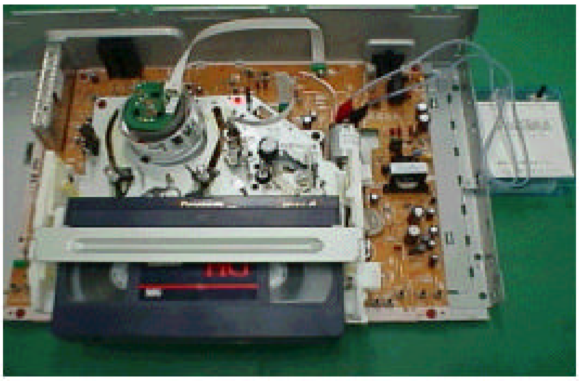


Fig.S7

3. Removal by manual operations after removing the Mechanism Unit.
   a. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring the Disassembly Procedures.
   b. Remove the Screw (S1) and remove the Loading Motor both shown in Fig.S8.

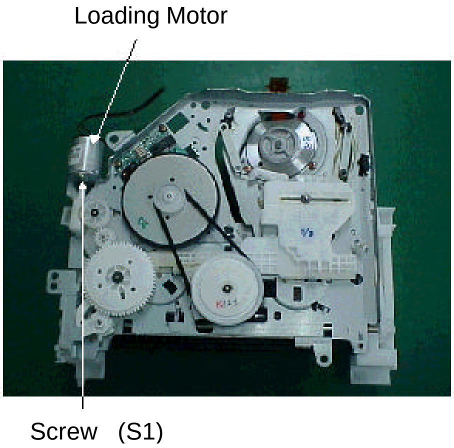


Fig.S8

   c. Rotate the Main Cam Gear counter-clockwise (Fig.S9) until just before the unloading would be completed as shown in Fig.S3.
   d. Rotate the Capstan Motor clockwise (Fig.S9) to remove the tape slacks as shown in Fig.S6.

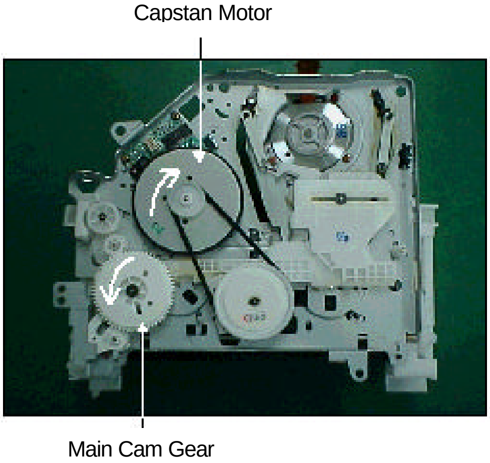


Fig.S9

   e. Rotate the Main Cam Gear counter-clockwise again (Fig.S7) to remove the cassette-tape as shown in Fig.S8.
   f. Set the Position Switch to EJECT POSITION certainly as shown in Fig.S10.

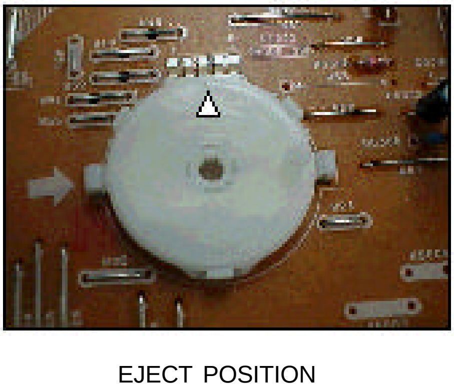


Fig.S10

   g. Install the Loading Motor and tighten screw (S1) as shown in Fig.S8.

3. REMOVAL OF CASSETE HOLDER UNIT & MECHANISM CHASSIS

3-1. REMOVAL OF MECHANISM CHASSIS UNIT

1. Remove the Top Panel and the Front Panel.

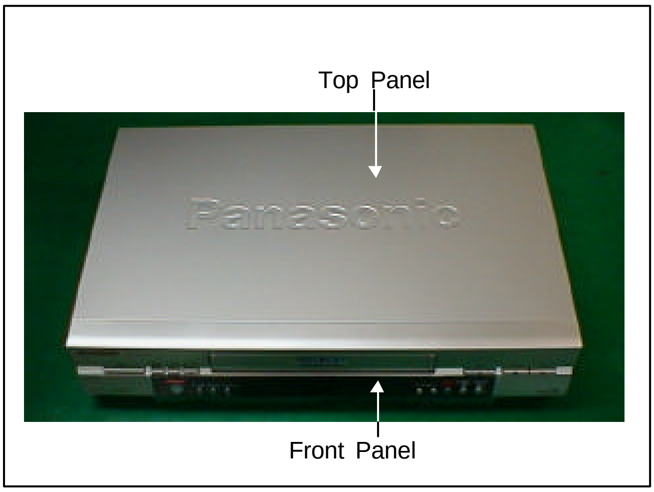

Top Panel
Front Panel

Fig.R1

2. Remove three Black Screws and three Red Screws, and disconnect two Flexible Card Connectors (Cylinder and A/C Head) and P1531.

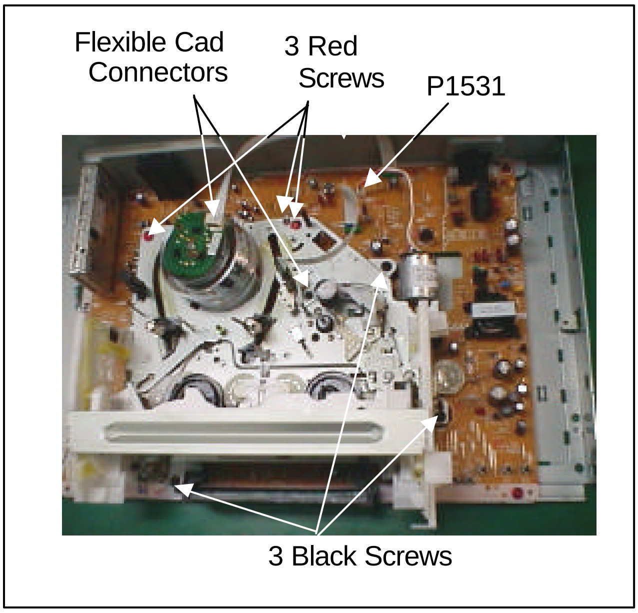

Flexible Cad Connectors
3 Red Screws
P1531
3 Black Screws

Fig.R2

3-2. REMOVAL OF CASSETTE HOLDER UNIT

1. Remove 2 Red Screws and unlock 3 Locking tabs to remove the Cassette Holder.

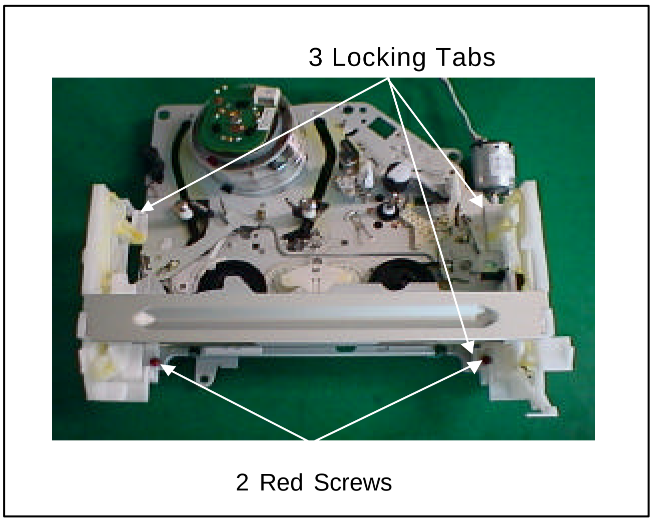

3 Locking Tabs
2 Red Screws

Fig.R3

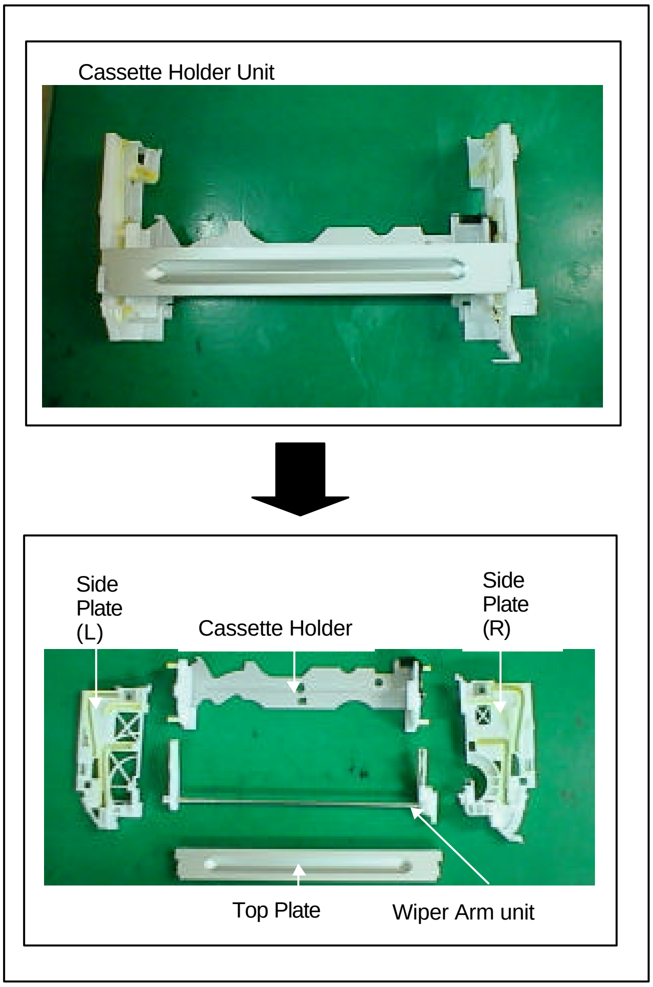

Cassette Holder Unit
Side Plate (L)
Cassette Holder
Side Plate (R)
Top Plate
Wiper Arm unit

Fig.R4

4. DISASSEMBLY /ASSEMBLY METHOD FOR MECHANISM

4-1. DISASSEMBLY OF MECHANISM

(1) Remove Take-up Brake Spring, Take-up Brake Arm and Take-up Reel Table.

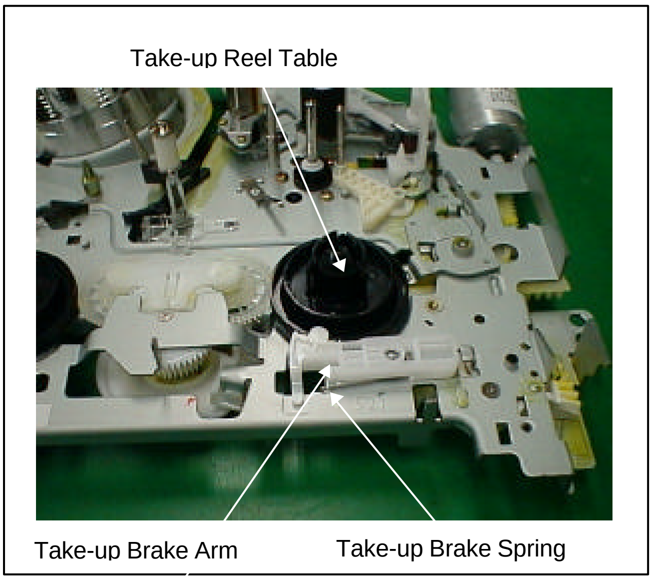

Take-up Reel Table
Take-up Brake Arm
Take-up Brake Spring

Fig.D1

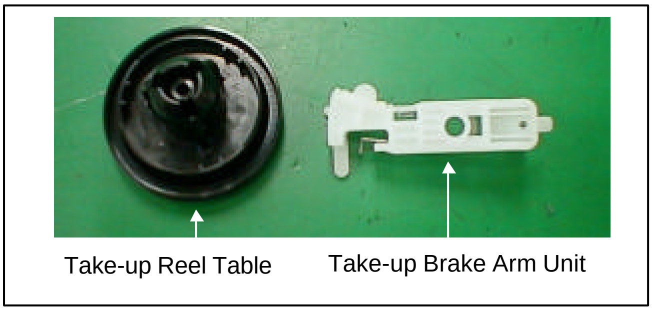

Take-up Reel Table
Take-up Brake Arm Unit

Fig.D2

(2) Keep Pressing Supply Shaft Holder Unit, slowly turn LED Prism clockwise up to 45° to remove.

Caution:

The LED Prism is made of soft material, handle with care when removing.

(3) Remove Idler Arm and Idler Gears.

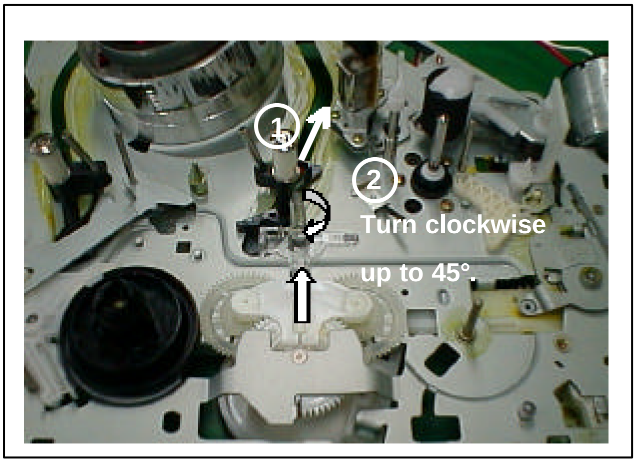

①
②
Turn clockwise
up to 45°.

Fig.D3

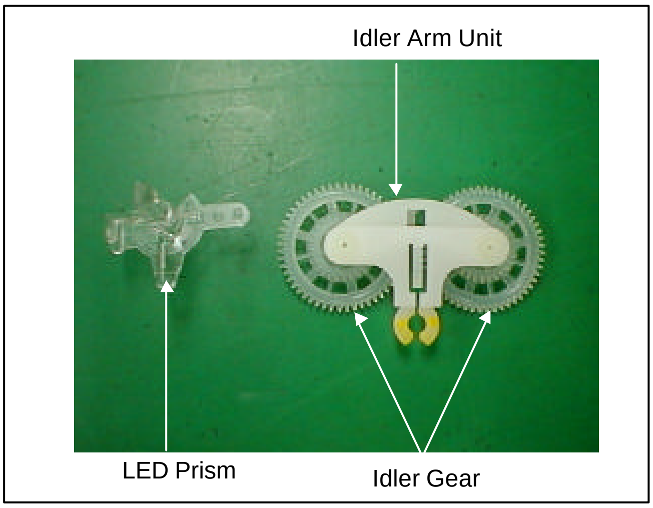

Idler Arm Unit
LED Prism
Idler Gear

Fig.D4

(4) Remove Tension Spring

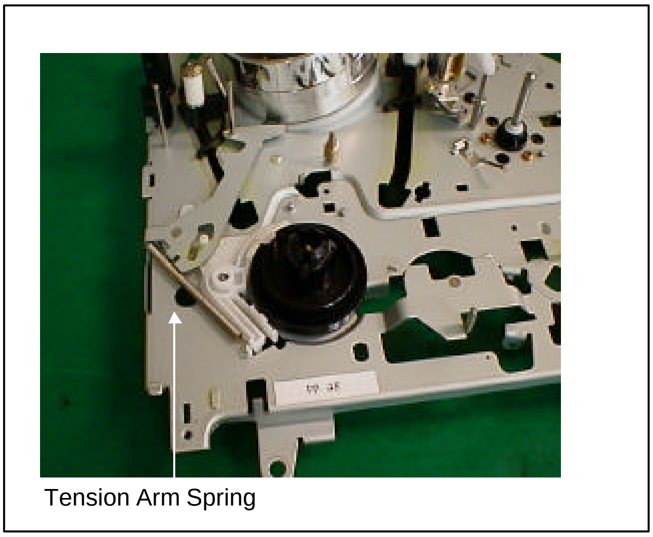

Tension Arm Spring

Fig.D5

(5) Unlock the Hooks of the boss on rear side of mechanism chassis to remove the Tension Arm Unit, and remove the Supply Brake Arm Unit and Supply Reel Table.

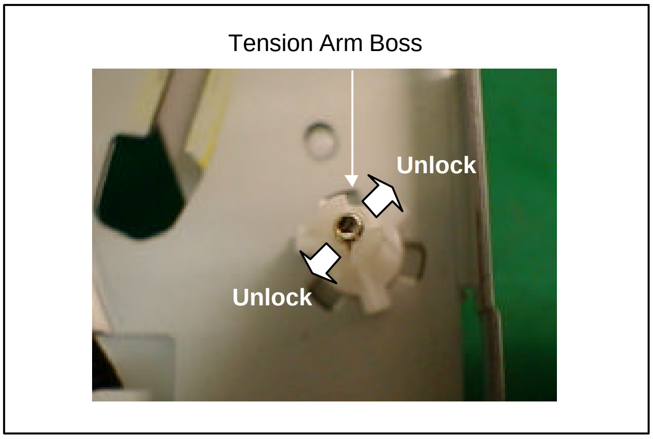

Tension Arm Boss
Unlock
Unlock

Fig.D6

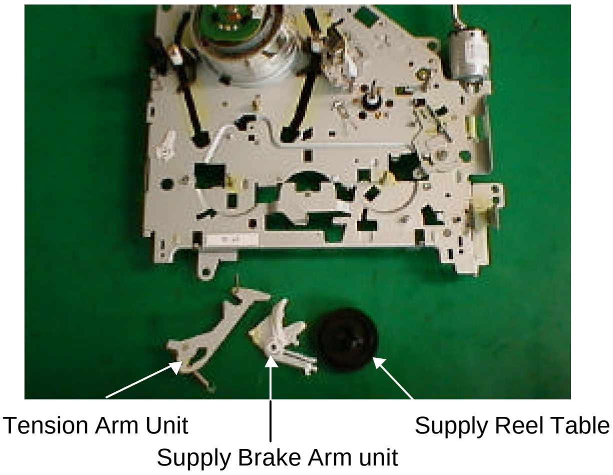

Tension Arm Unit
Supply Reel Table
Supply Brake Arm unit

Fig.D7

(6) Remove Opener Piece, Pinch Arm Unit and P5 Arm Unit in order.

Note:
Remove of the Pinch Charge Arm is performed in step (9).

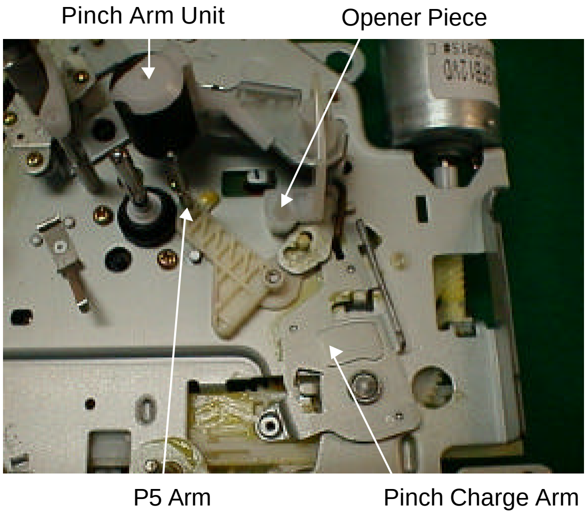

Pinch Arm Unit
Opener Piece
P5 Arm
Pinch Charge Arm

Fig.D8

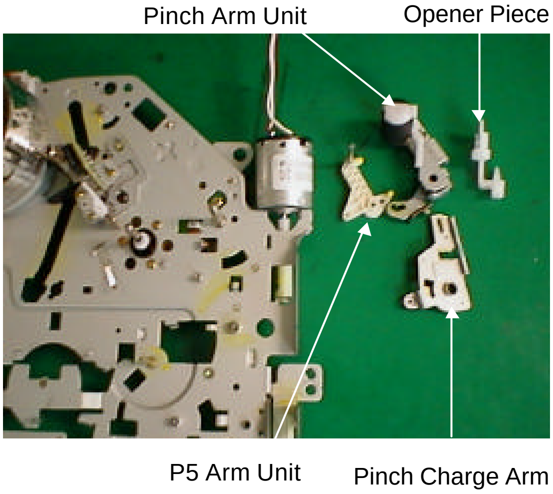

Pinch Arm Unit
Opener Piece
P5 Arm Unit
Pinch Charge Arm

Fig.D9

(7) Remove Cut Washer of the Main Cam Gear, and remove Main Cam Gear and Sector Gear Unit.

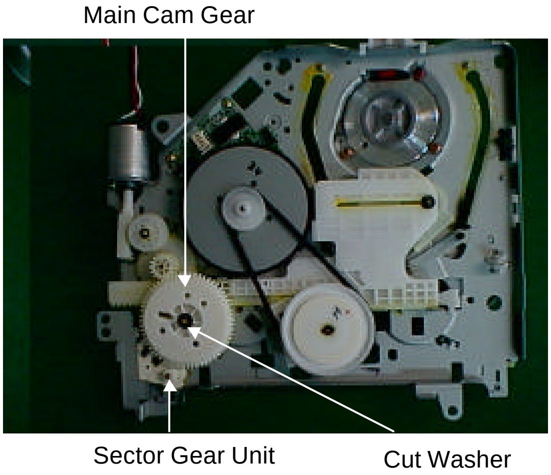

Main Cam Gear
Sector Gear Unit
Cut Washer

Fig.D10

(8) Remove the Cut Washer of the Center Clutch, and remove Center Clutch Unit, Change Lever Unit and Change Gear Spring, keep paying attention to do not lose the Change Gear Spring and the Cut Washer.

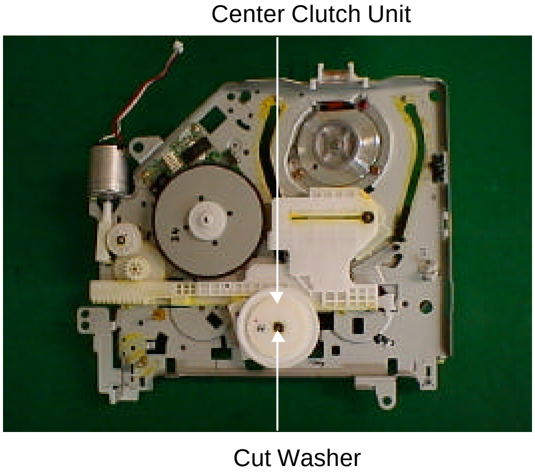

Center Clutch Unit
Cut Washer

Fig.D11

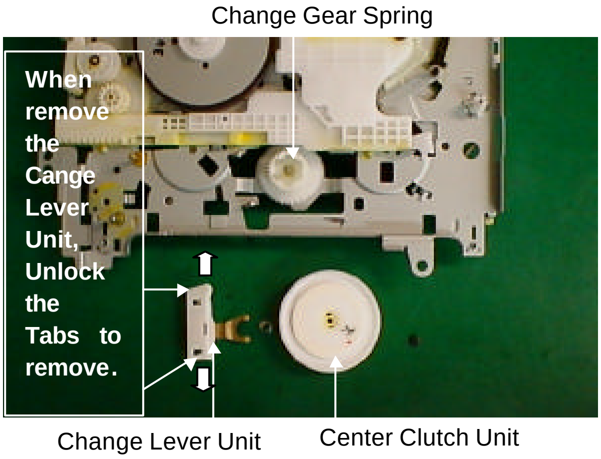

Change Gear Spring
When remove the Cange Lever Unit, Unlock the Tabs to remove.
Change Lever Unit
Center Clutch Unit

Fig.D12

(9) Remove the Cut Washer, and push the Main Lever rightward to the limit and remove the Main Lever, and turn over the Mechanism Chassis and remove the Pinch Charge Arm shown in Fig.D8.

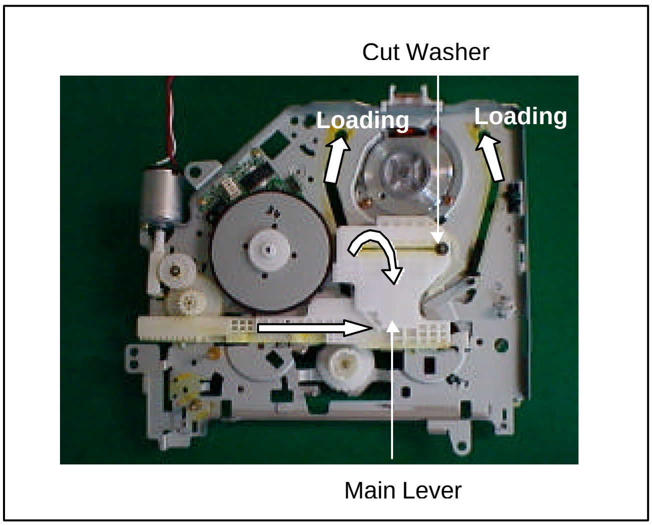

Cut Washer
Loading
Loading
Main Lever

Fig.D13

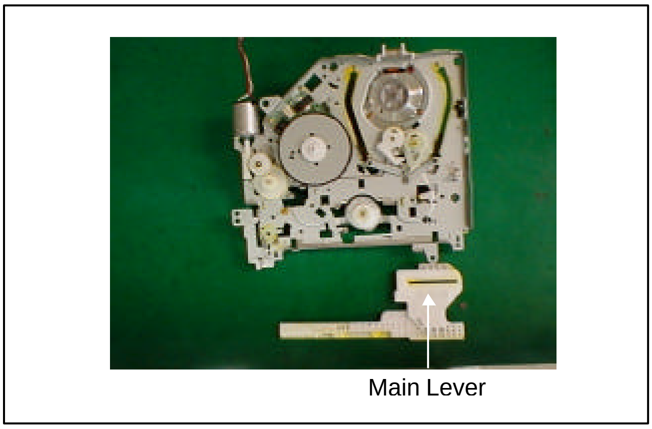


Fig.D14

(10) Remove the Supply Loading Arm Unit and Take-up Loading Arm Unit.

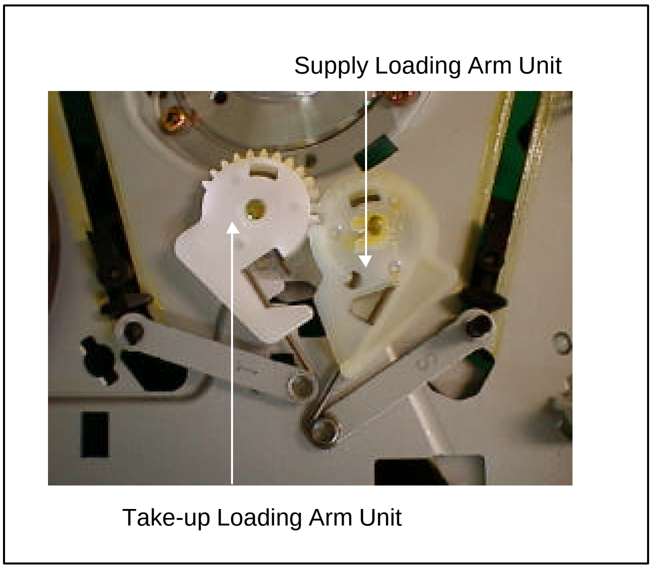

Supply Loading Arm Unit
Take-up Loading Arm Unit

Fig.D15

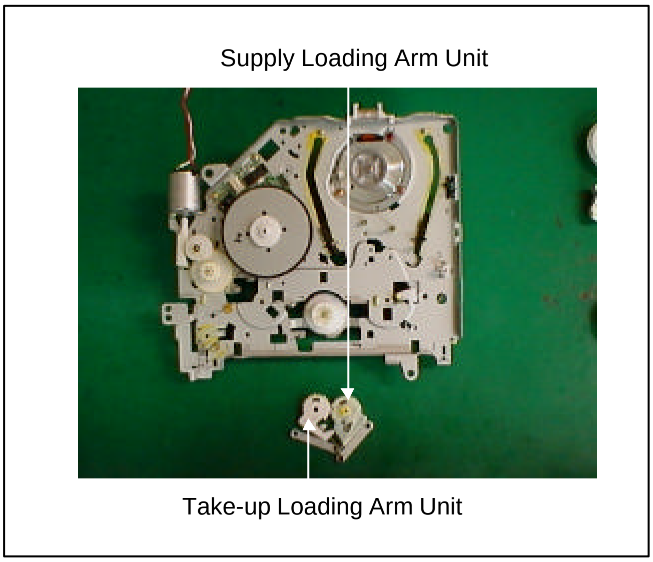

Supply Loading Arm Unit
Take-up Loading Arm Unit

Fig.D16

(11) Pull the Supply Shaft Holder Unit and Take-up Shaft Holder Unit toward you to the limit, and remove them.

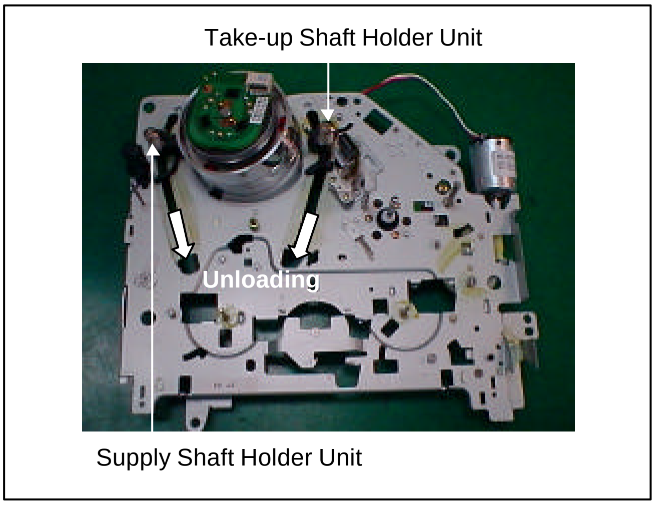

Take-up Shaft Holder Unit
Unloading
Supply Shaft Holder Unit

Fig.D17

(12) Remove the Cut Washer for the Torque Clutch Unit, and remove the Torque Clutch Unit, Intermediate Gear and Change Gear.

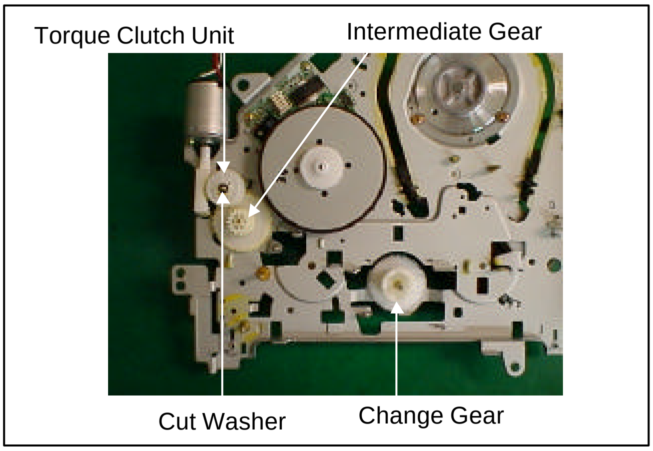

Torque Clutch Unit
Intermediate Gear
Cut Washer
Change Gear

Fig.D18

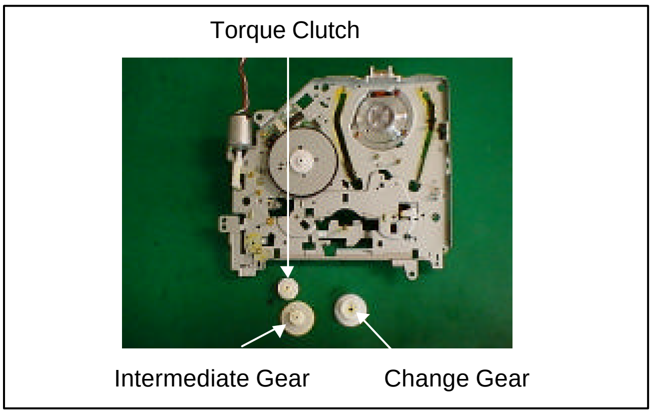

Torque Clutch
Intermediate Gear
Change Gear

Fig.D19

(13) Remove 2 Screws for the Stator and 3 Screws for the Capstan Unit, and remove the Capstan Unit.

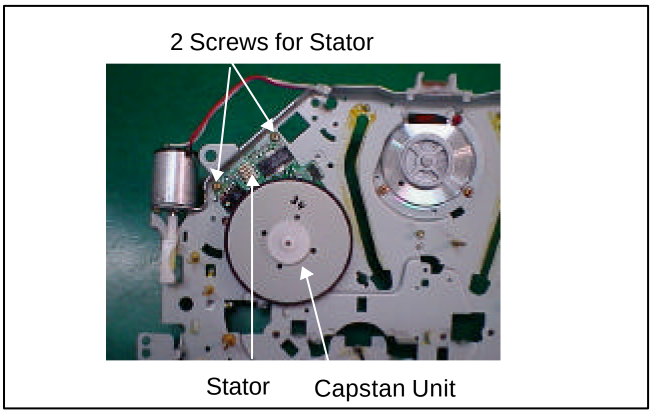

2 Screws for Stator
Stator
Capstan Unit

Fig.D20

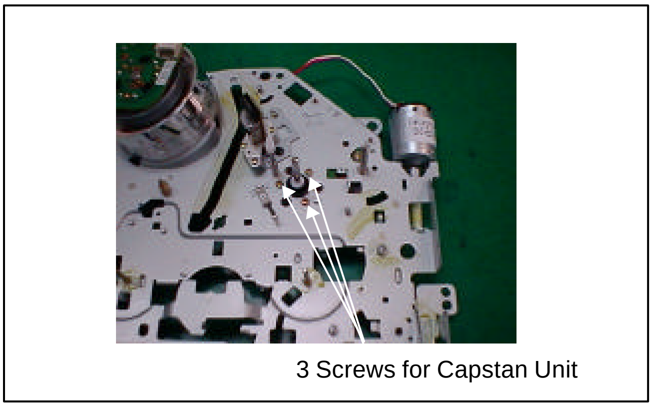

3 Screws for Capstan Unit

Fig.D21

(14) Remove a Screw for A/C Head Unit, and remove the A/C Head Unit.

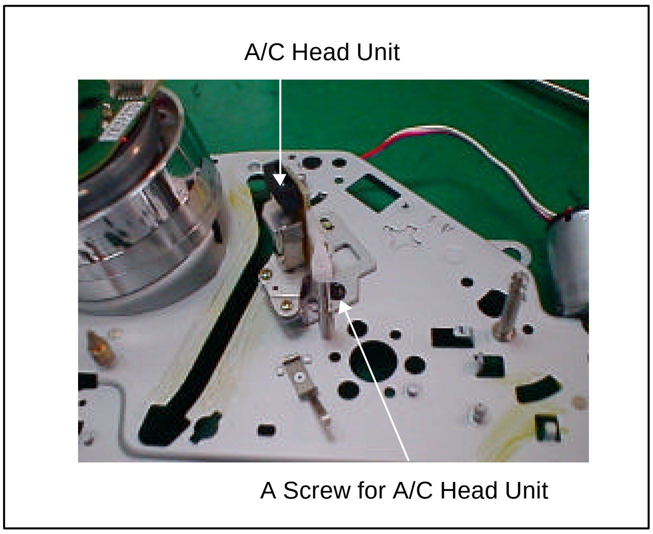

A/C Head Unit
A Screw for A/C Head Unit

Fig.D22

(15) Remove a Screw for the Loading Motor, and remove the Loading Motor Unit.

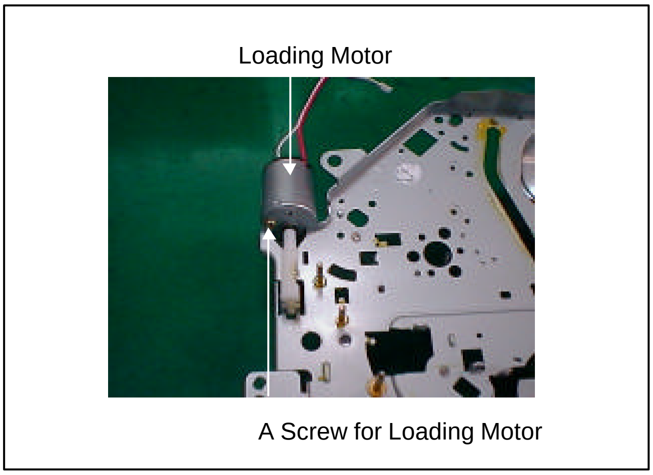

Loading Motor
A Screw for Loading Motor

Fig.D23

4-2. ASSEMBLY AND PHASE ADJUSTMENT OF MECHANISM

NOTE:
When install the replacement parts to Chassis; apply the Floil Grease (VFK1298A).

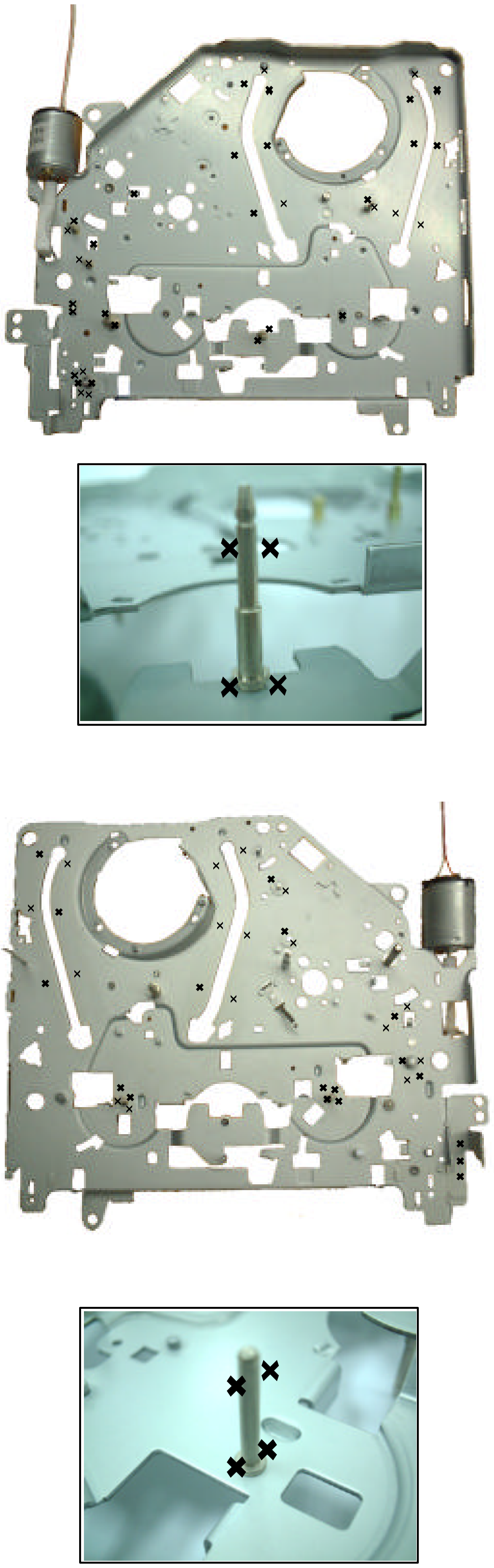


Fig.A1

(1) Install the Loading Motor Unit not to scratch the Worm Gear, and tighten the Screw for the Loading Motor Unit.

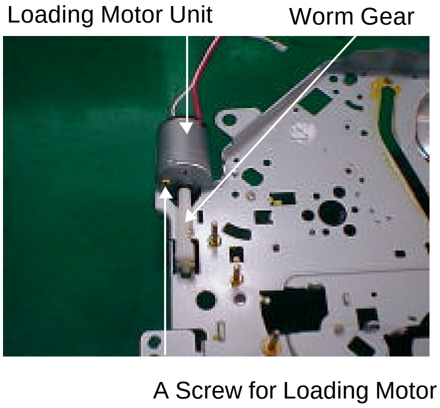

Loading Motor Unit
Worm Gear
A Screw for Loading Motor

Fig.A2

(2) Install the A/C Head Unit and tighten the Screw for A/C Head Unit.

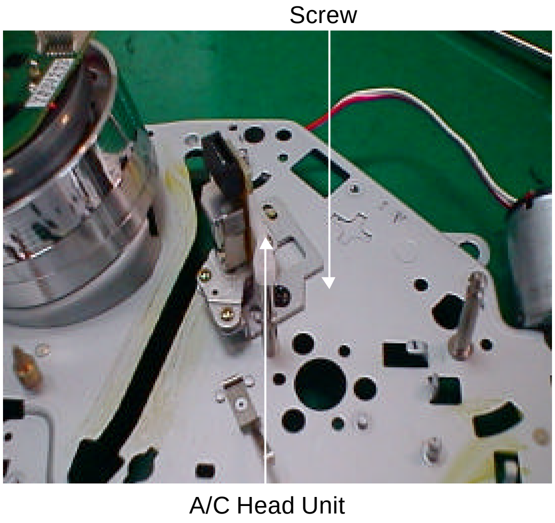
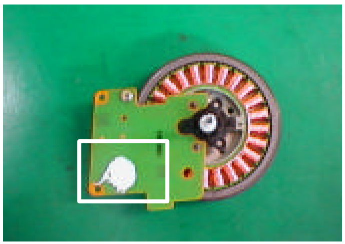

Screw
A/C Head Unit

Fig.A3

(3) Install the Capstan Motor Unit, and tighten 3 Screws for the Capstan Motor Unit and 2 Screws for Stator.

NOTE:
When install the replacement parts; apply the Silicon Grease (VFK1301) on IC0201 portion.



Applying portion

Fig.A4

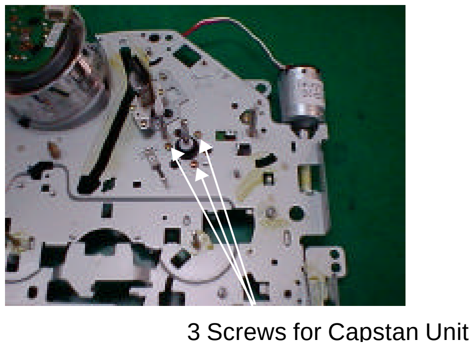

3 Screws for Capstan Unit

Fig.A5

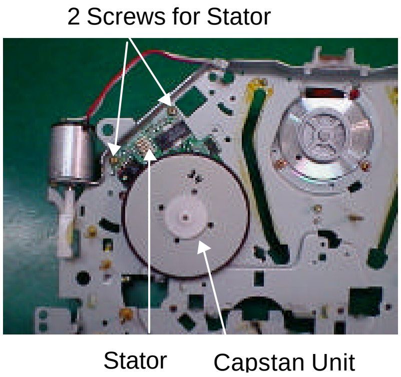

2 Screws for Stator
Stator
Capstan Unit

Fig.A6

(4) Install Pinch Charge Arm, P5 Arm Unit, Pinch Arm Unit and Opener Piece in order.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

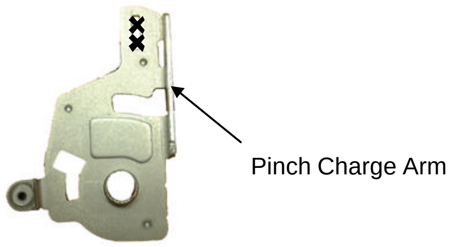

Pinch Charge Arm

Fig.A7

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

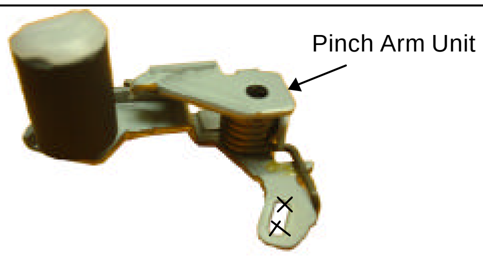

Pinch Arm Unit

Fig.A8

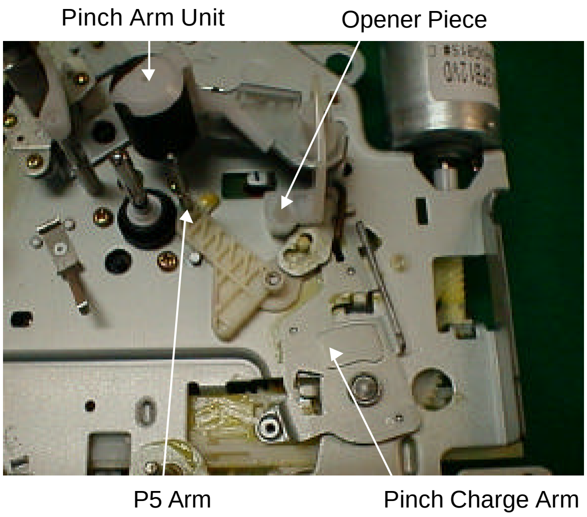

Pinch Arm Unit
Opener Piece
P5 Arm
Pinch Charge Arm

Fig.A9

Note:
Install the Spring of Pinch Arm Unit into the Hole of Pinch Charge Arm as shown in Fig.A10.

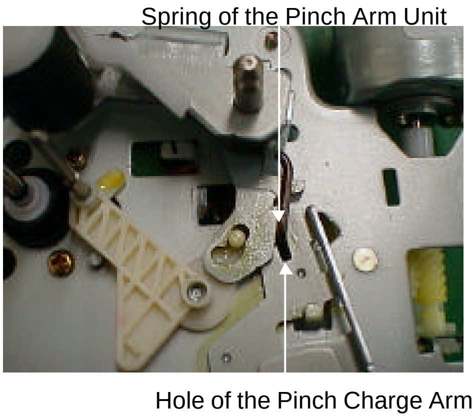

Spring of the Pinch Arm Unit
Hole of the Pinch Charge Arm

Fig.A10

(5) Install the Supply Shaft Holder Unit and Take-up Shaft Holder Unit.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

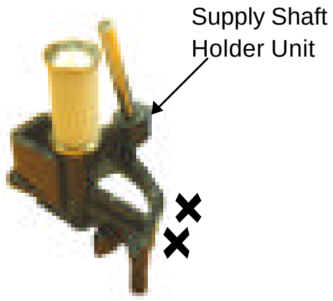

Supply Shaft
Holder Unit

Fig.A11

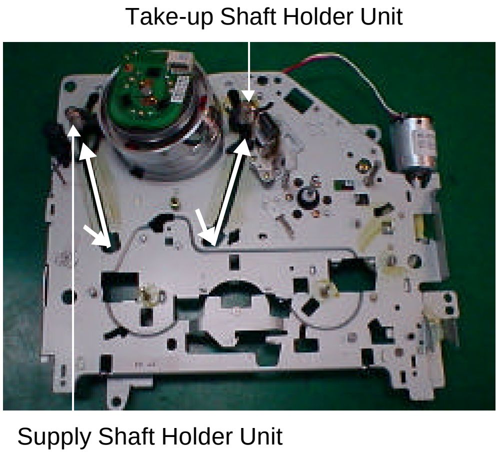

Take-up Shaft Holder Unit
Supply Shaft Holder Unit

Fig.A12

(6) Install the Intermediate Gear, Torque Clutch and Cut Washer in order.

(7) Install the Change Gear.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

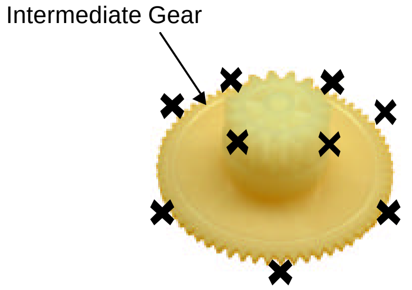

Intermediate Gear

Fig.A13

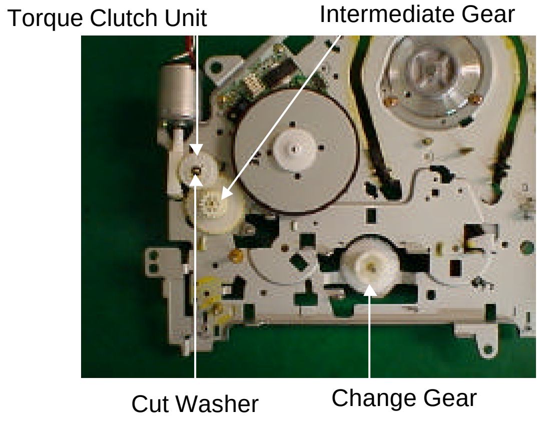

Torque Clutch Unit
Intermediate Gear
Cut Washer
Change Gear

Fig.A14

(8) Install the Take-up Loading Arm Unit.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

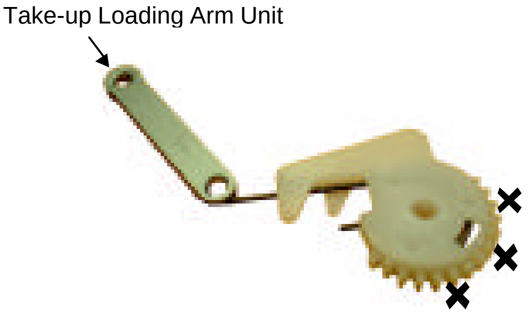

Take-up Loading Arm Unit

Fig.A15

Note:
Install the boss of the Take-up Shaft Holder Unit into the Hole of the Take-up Loading arm Unit.

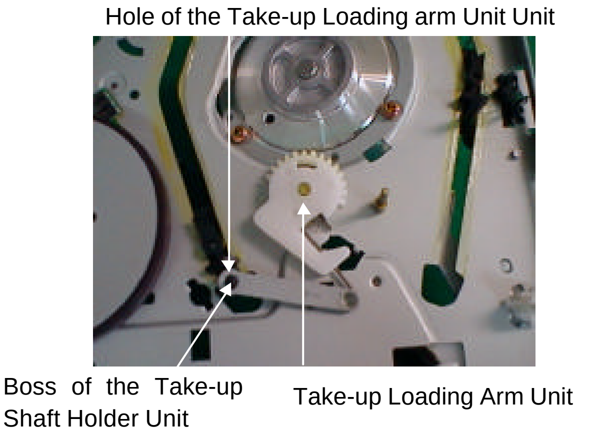

Hole of the Take-up Loading arm Unit Unit
Boss of the Take-up Shaft Holder Unit
Take-up Loading Arm Unit

Fig.A16

(9) Install the Supply Loading Arm Gear Unit, adjusting the phase between Take-up Loading Gear and the Supply Loading Gear as shown in Fig.A12.

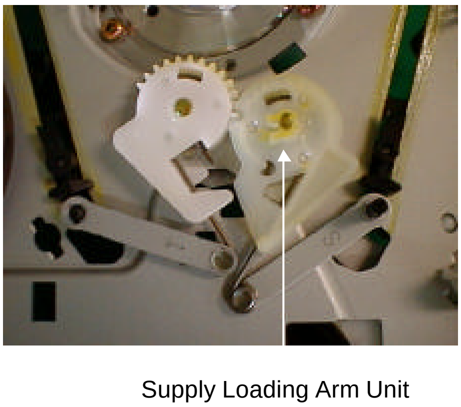

Supply Loading Arm Unit

Fig.A17

Phase Adjustment

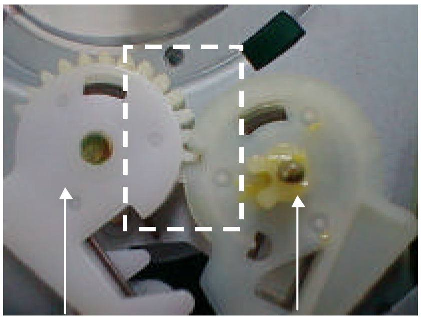

Take-up Loading Arm Gear
Supply Loading Arm Gear

Fig.A18

(10) Set the Concave portion of Take-up Loading Arm Gear to the position shown in Fig.A19.

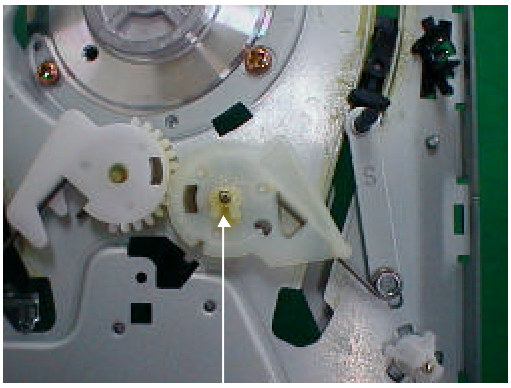
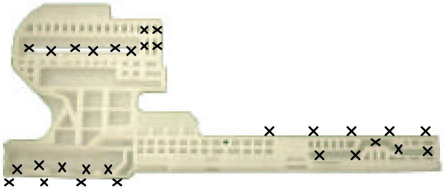

Concave portion of Take-up Loading Arm Gear

Fig.A19

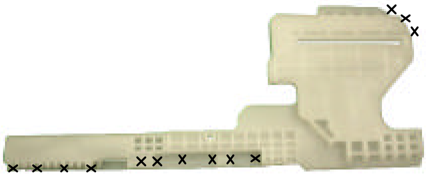
(11) Install the Main Lever so that the convex portion on rear side of the Main Lever (Fig.A21) is fitted into the concave portion of Take-up Loading Arm Gear (Fig.A19), and install the Cut Washer as shown in Fig.A22.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

Main Lever



a) Inside



b) Outside

Fig.A20

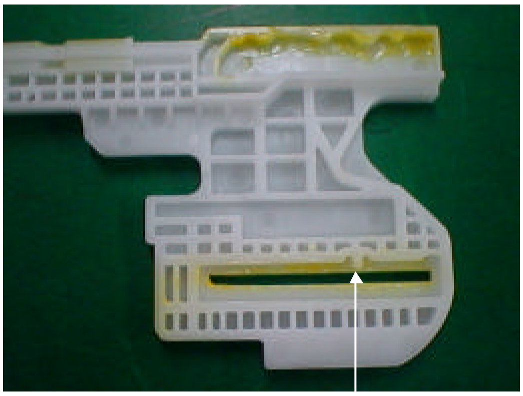

Convex portion on rear side of the Main Lever

Fig.A21

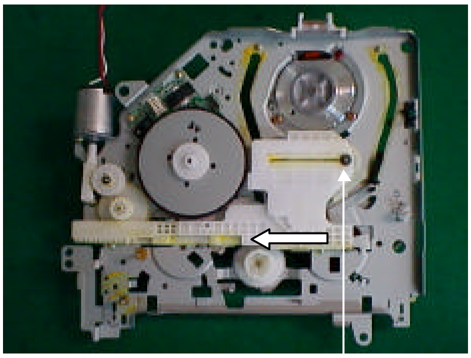


Fig.A22

(12) Push the Main Lever leftward to adjust the phase so that the hole of Main Lever is met with the hole of Chassis as shown in Fig.A16.

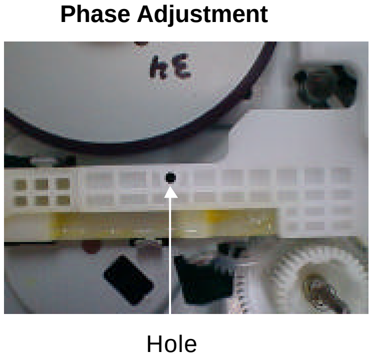

Phase Adjustment
Hole

Fig.A23

(13) Install the Change Lever into the aperture of Change Gear.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

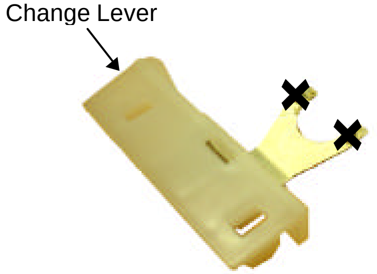

Change Lever

Fig.A24

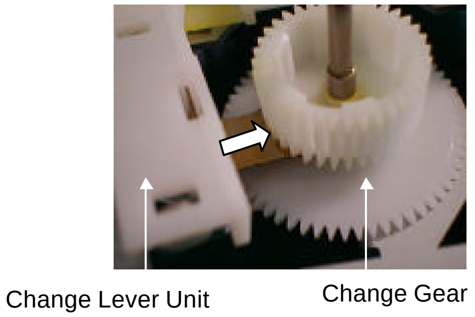

Change Lever Unit
Change Gear

Fig.A25

(14) Install the Change Gear Spring through the shaft for Change Gear.

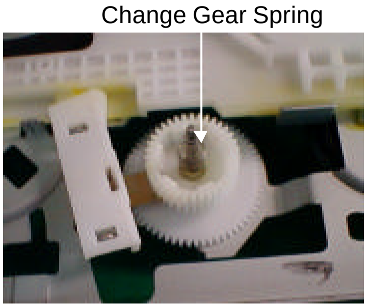

Change Gear Spring

Fig.A26

(15) Install the Center Clutch Unit and the Cut Washer.

Note:

Keep paying attention to do not lose the Change Gear Spring and the Cut Washer.

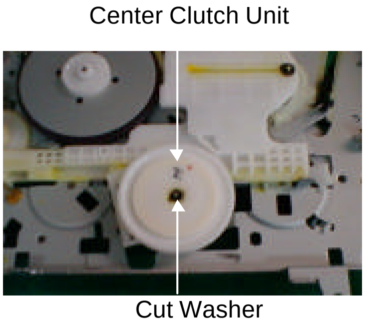

Center Clutch Unit
Cut Washer

Fig.A27

(16) Install the Sector Gear Unit so that the Phase Adjustment Hole of Sector Gear Unit is met with the Adjustment Hole of Chassis.

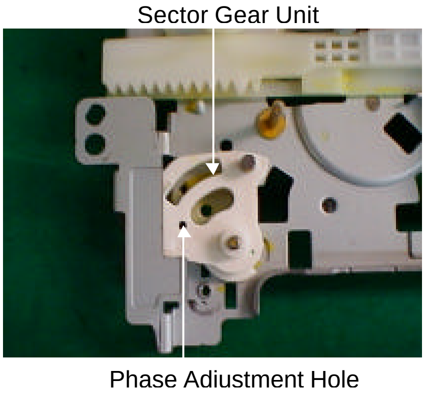

Sector Gear Unit
Phase Adiustment Hole

Fig.A28

(17) Install the Main Cam Gear so that the Phase Adjustment Hole of Main Cam Gear is met with the hole of Chassis, and install the Cut Washer.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

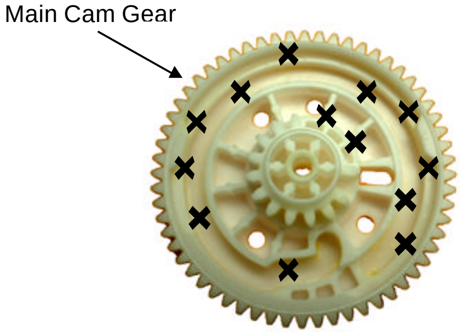

Main Cam Gear

Fig.A29

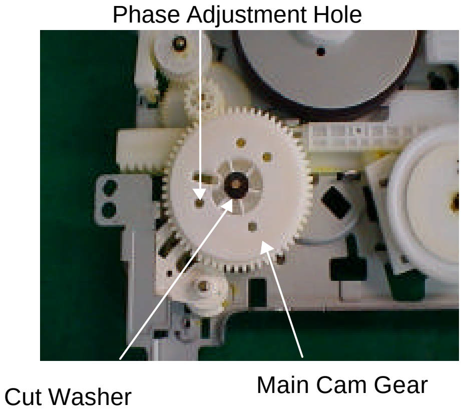

Phase Adjustment Hole
Cut Washer
Main Cam Gear

Fig.A30

(18) Install the Capstan Belt.

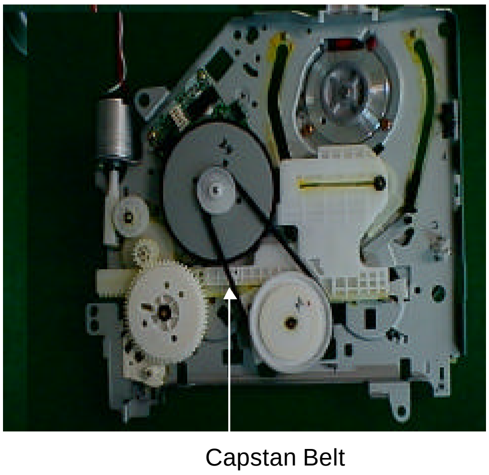

Capstan Belt

Fig.A31

(19) Install the Supply Brake Arm Unit.

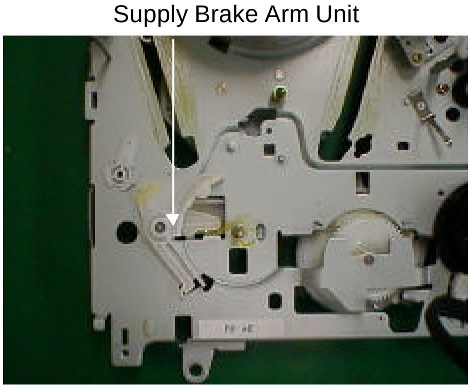

Supply Brake Arm Unit

Fig.A32

(20) Install the Supply Reel Table.

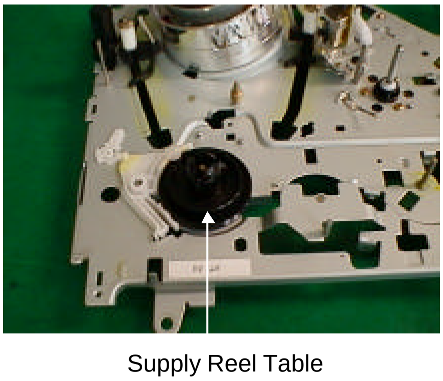

Supply Reel Table

Fig.A33

(21) Install the Tension Arm Unit into the Tension Arm Boss.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

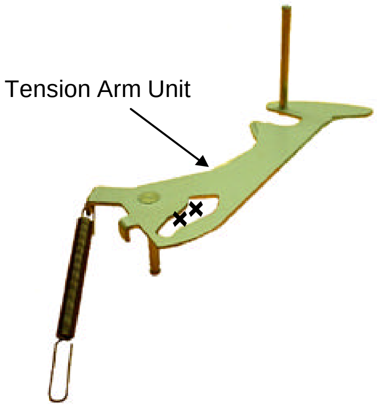

Tension Arm Unit

Fig.A34

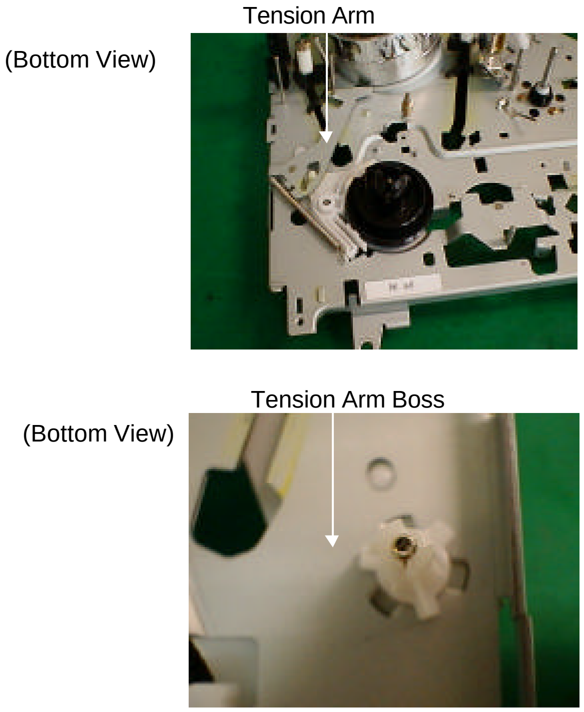

Tension Arm
(Bottom View)
Tension Arm Boss
(Bottom View)

Fig.A35

(22) Install the Tension Spring to the Supply Brake Arm Unit.

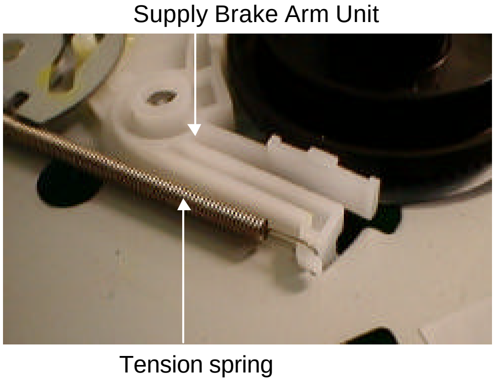

Supply Brake Arm Unit
Tension spring

Fig.A36

(23) Confirm that the Idler Gears are installed onto the Idler Arm, and install the Idler Arm to Chassis.

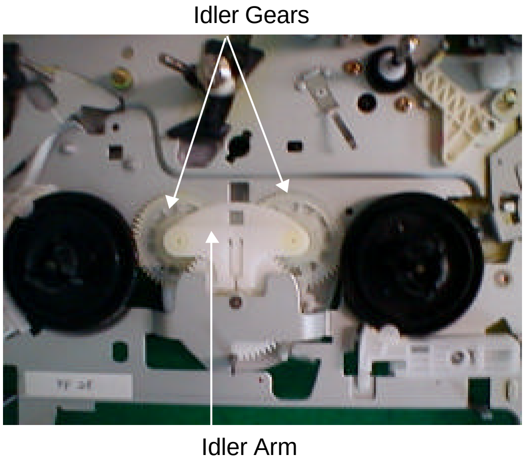

Idler Gears
Idler Arm

Fig.A37

(24) Install the LED Prism and turn it counter-clockwise.

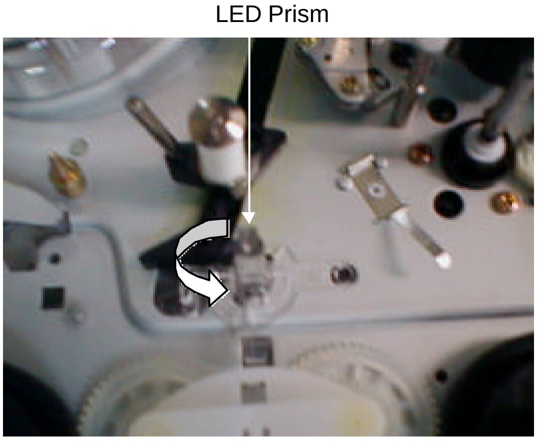


Fig.A38

Caution:

The LED Prism is easy to break, therefore treat it carefully.

(25) Install the Take-up Reel Table.

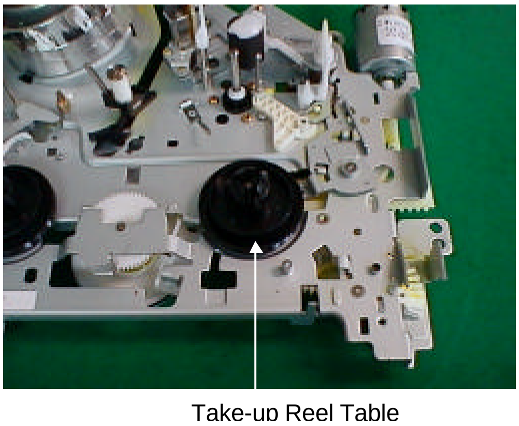

Take-up Reel Table

Fig.A39

(26) Install the Take-up Brake Arm Unit, and then hook the Take-up Brake Spring to Chassis.

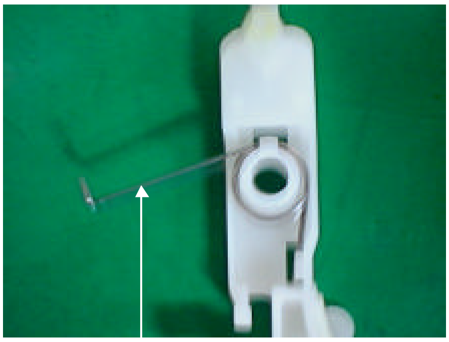

Take-up Brake Arm Unit
Take-up Brake Spring

Fig.A40

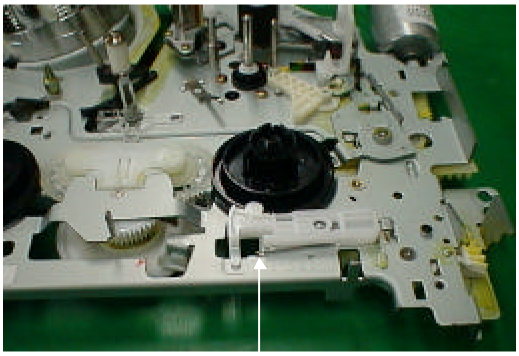

Hook the Take-up Brake Spring

Fig.A41

(27) Confirm the Mechanism Phases so that see through the Adjustment Hole and hole of Chassis at three Adjustment portions.

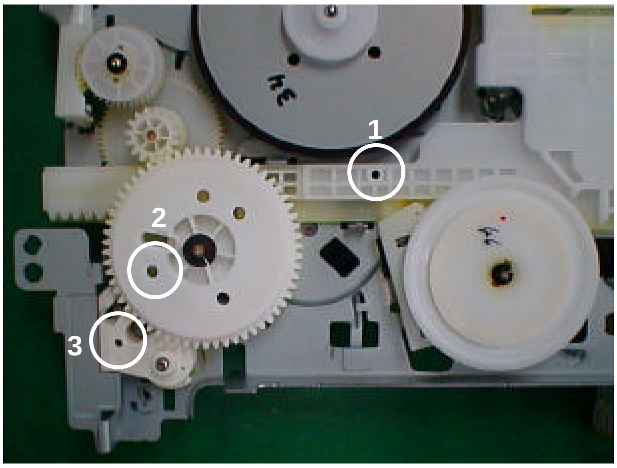
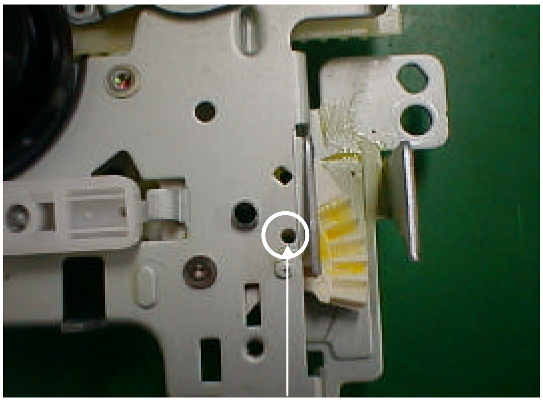


Fig.A42

INSTALLATION OF THE SLOT-IN UNIT

(28) Confirm the phase of Sector Gear.



Confirm that the Adjustment Holes of Sector Gear and Chassis are seen through.

Fig.A43

(29) Place the Cassette Holder on front end of the Slot-in Unit.

(30) Insert the convex portions of the Slot-in Unit into the grooves of Chassis.

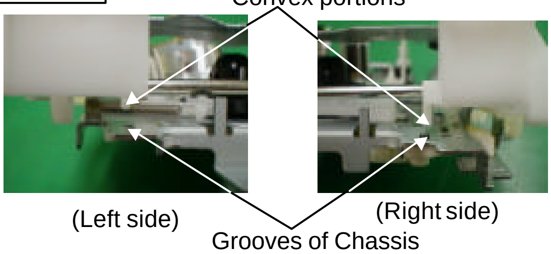

Front View
Convex portions
(Left side)
(Right side)
Grooves of Chassis

Fig.A44

(31) Reconfirm Slot-in Unit is correct phase as shown in Fig.A35 (Sharp edge of Wiper Arm R is in line with the Sector Gear Hole).

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

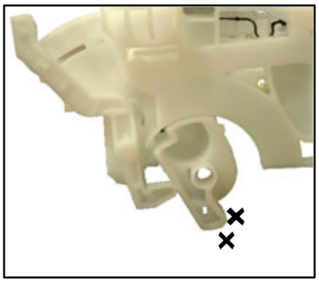


Fig.A45

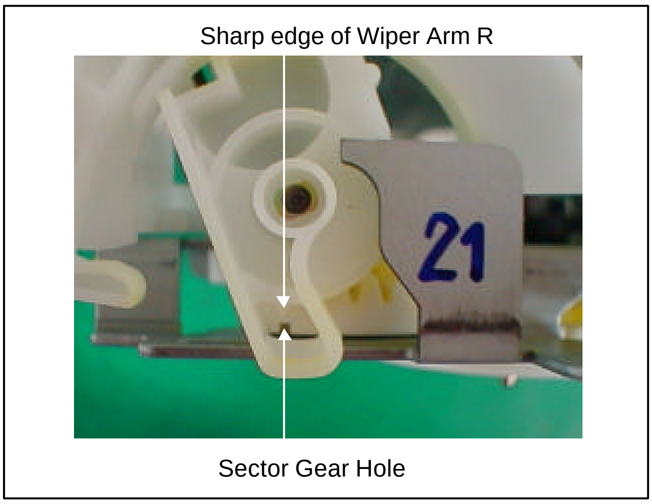

Sharp edge of Wiper Arm R
21
Sector Gear Hole

Fig.A46

(32) Insert the convex portions of Side Plate R & L into the grooves of Chassis.

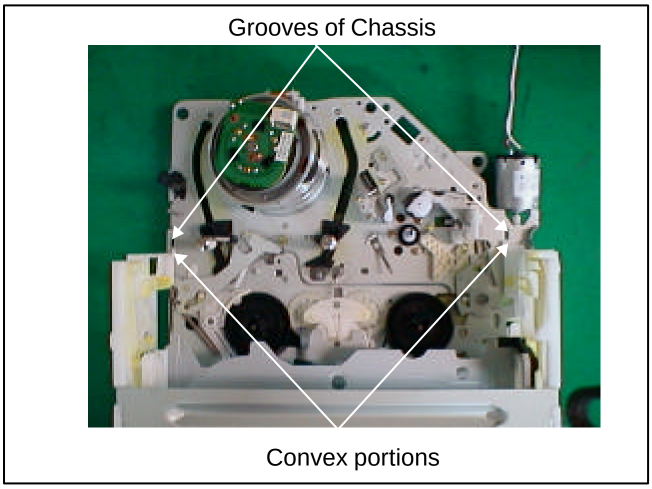

Grooves of Chassis
Convex portions

Fig.A47

(33) Tighten the 2 Screws.

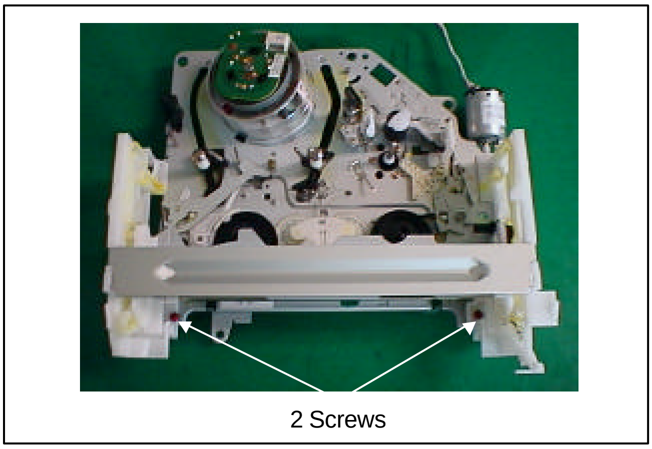


Fig.A48

(34) Place the Mode Switch to EJECT position.

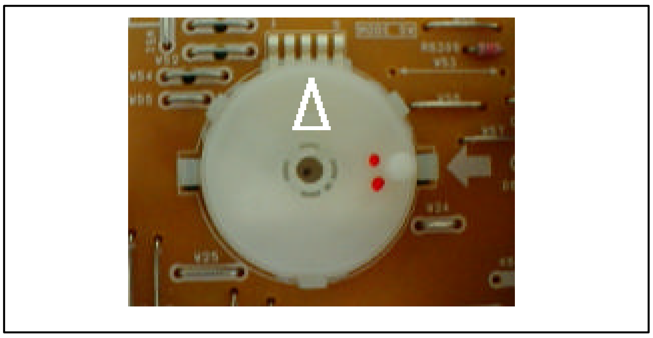


Fig.A49

(35) Install the Mechanism Chassis onto the Main C.B.A., and tighten three Black Screws and three Red Screws with earth lead, and connect two Flexible Card Connectors (Cylinder and A/C Head) and P1531.

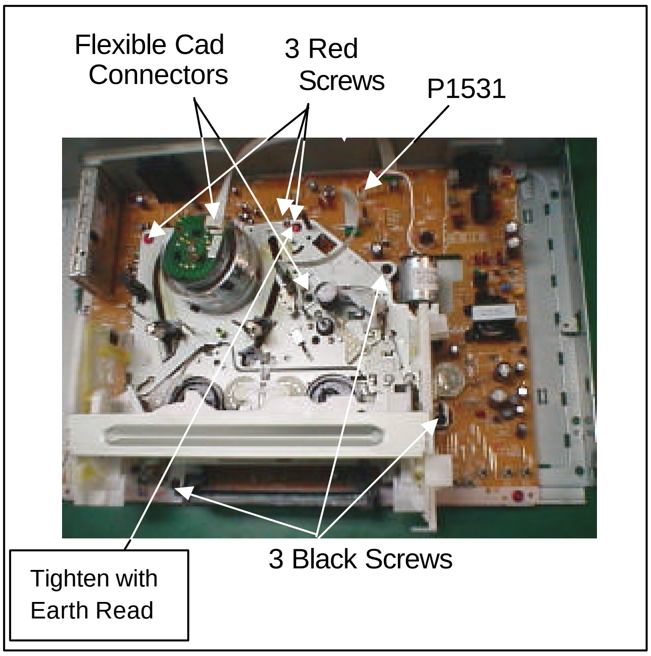

Flexible Cad Connectors
3 Red Screws
P1531
3 Black Screws
Tighten with Earth Read

Fig.A50

PHASE ADJUSTMENT OF P4 CAP

(36) Adjust the P4 Cap so that the Direction of P4 Cap is on y-axis with tolerance ± 5 °.

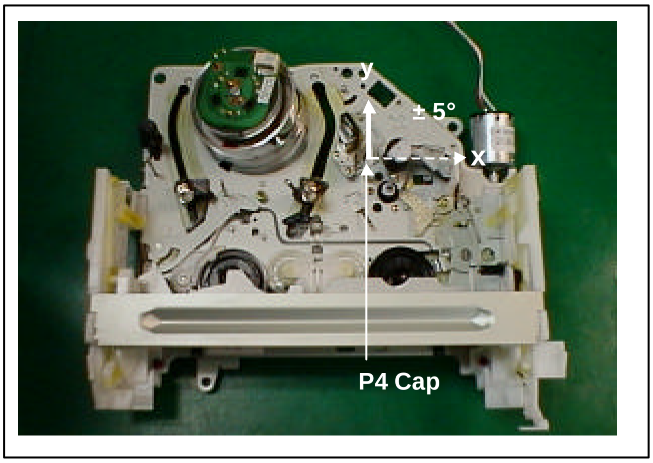


Fig.A51

5. MECHANICAL ADJUSTMENT PROCEDURE

5-1. P2 AND P3 POST ADJUSTMENT (PREADJUSTMENT)

Equipment required:
Post Adjustment Screwdriver (VFK0329)

(1) Remove the Top Plate.
(2) Turn the Loading Motor unit until the unloading completes.
(3) Rotate the P2 and P3 Posts clockwise to the end.(Fig.M1)
(4) Rotate the P2 and P3 Posts twice counterclockwise.(Fig.M1)

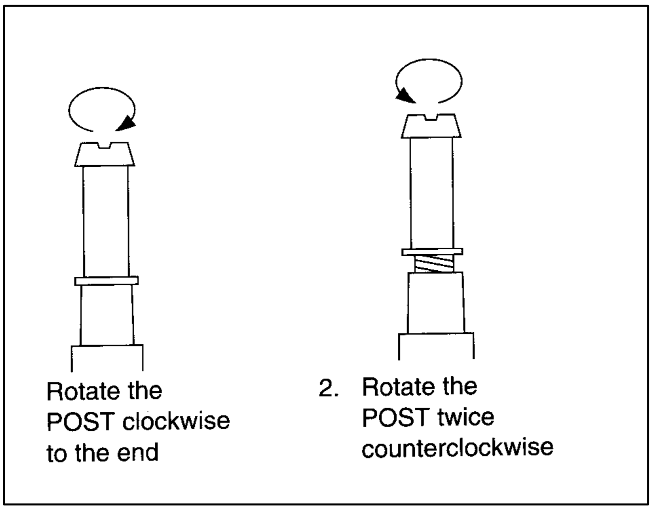

Rotate the POST clockwise to the end
2. Rotate the POST twice counterclockwise

Fig.M1

(5) Playback the cassette tape and make sure that the edges of the tape are not curing at the bottom or top ends of the P2, P3 and P4 Posts as shown in Fig.M2.

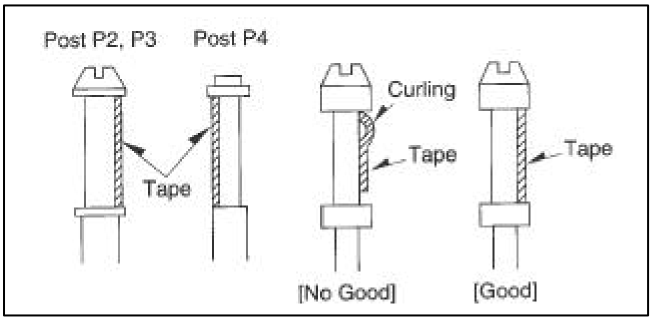


Fig.M2

6) If the curing appears, readjust the P2 and P3 Posts.

5-2. TAPE INTERCHANGEABILITY ADJUSTMENT

Carry out the following procedures for Tape Interchangeability Adjustment to do it correctly and smoothly.

(1) P2 AND P3 POST ADJUSTMENT
(2) ADJUSTMENT OF P4 POST
(3) HEIGHT ADJUSTMENT OF A/C HEAD
(4) FINE-ADJUSTMENT OF A/C HEAD
(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)
(6) FINE-ADJUSTMENT OF X-VALUE

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from (1) to (6).

CAUTIONS:

Turn the Auto-Tracking to off, and set the tracking control to center fixing position.

To make an Adjustment Mode for Tape Interchangeability, press the FF, REW and EJECT buttons simultaneously 3 times to set the Service Mode 2. Then the Auto Tracking becomes off.
* In case of the VCR mounts JOG SHUTTLE, turn the shuttle ring to FF and then press EJECT button.

NOTE:
Cleaning the Tape Transport path before adjusting of the Tape Interchangeability. The detail portion is shown below.

Cleaning portions:
P0 Post, Tension Posts, FE Head, P2 Post, Supply Inclined Post, Cylinder Unit, Take-up Inclined Post, P3 Post, A/C Head, P4 Post, Pinch Roller, Capstan Shaft and P5 Post.
Note:
FE Head, Cylinder Unit, A/C Head and Capstan Shaft are more important parts and pay attention to clean them.

5-2-(1). P2 AND P3 POST ADJUSTMENT

Equipment required:
Alignment Tape (PAL/SECAM: VFJ8125H3F)
(NTSC: VFM8080HQFP)
Post Adjustment Screwdriver (VFK0329)

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig.M3.

NOTE:
To get a stable waveform of the Head Amp output (observation point TW3001 and TW2001 located on Main C.B.A.) on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig.M3.

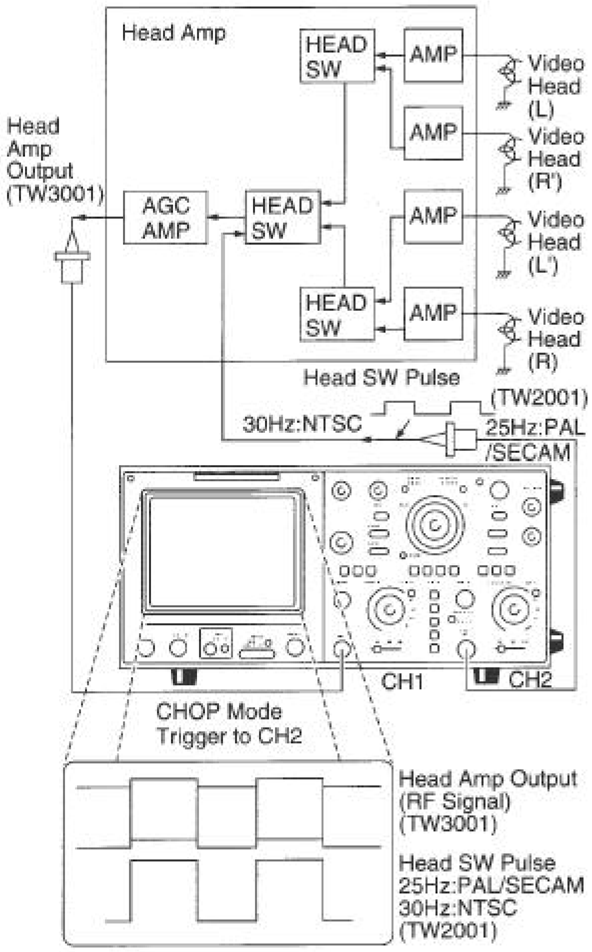

Head Amp
HEAD SW
AMP
Video Head (L)
AMP
Video Head (R')
Head Amp Output (TW3001)
AGC AMP
HEAD SW
AMP
Video Head (L')
HEAD SW
AMP
Video Head (R)
Head SW Pulse
(TW2001)
30Hz:NTSC
25Hz:PAL /SECAM
CH1
CH2
CHOP Mode
Trigger to CH2
Head Amp Output (RF Signal) (TW3001)
Head SW Pulse 25Hz:PAL/SECAM 30Hz:NTSC (TW2001)

Fig.M3 Connection of Oscilloscope

(2) Playback the Alignment Tape.
(3) If the RF envelope appears like example "A" or "B" in Fig. M4, then adjustment of the tape guide post (P2: Entrance) is necessary.
(4) Adjust the Tape Guidepost (2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig.M4"C".

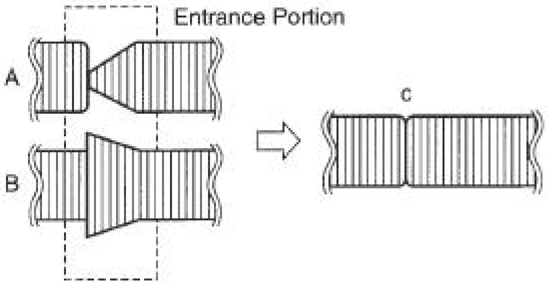

Entrance Portion
A
B
C

Fig.M4

(5) If the envelope appears like "D" or "E" in Fig.M5, then adjustment of the tape guide post (P3: Exit) is necessary.
(6) Adjust the tape guidepost (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in Fig.M8"F".

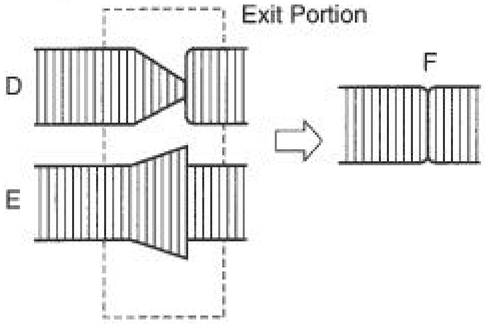

Exit Portion
D
E
F

Fig.M5

(7) Keep pressing the tracking up/down (∧ or ∨ buttons on the remote controller unit. The output envelope should vary nearly parallel with other condition as shown in Fig.M6.
(8) Set the tracking control into center fix position by pressing the tracking up/down (∧ or ∨ simultaneously and adjust for maximum RF envelope, whilst being as flat as possible.

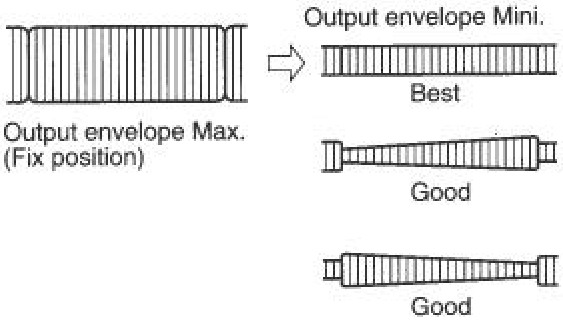

Output envelope Mini.
Best
Output envelope Max. (Fix position)
Good
Good

Fig.M6

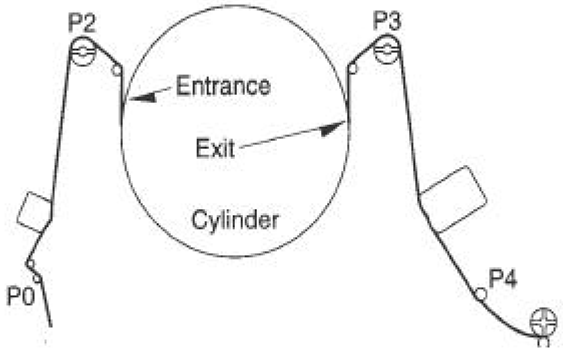

P2
P3
Entrance
Exit
Cylinder
P0
P4

Fig.M7

Aim for P2, P3 Posts Adjustment

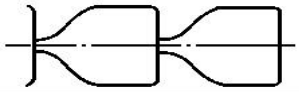
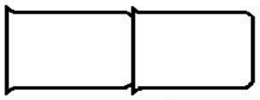
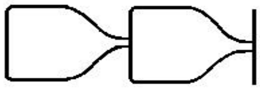
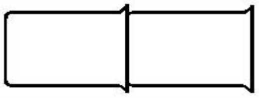
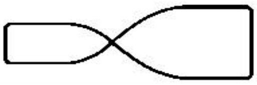
Envelope	Post Name	Adjustment Method
	P2 Post ↺	Turn P2 Post counter-clockwise (Approx. 1/2 revolutions)
	P2 Post ↻	Turn P2 Post clockwise (Approx. 1/4 revolitions)
	P3 Post ↻	Turn P3 Post clockwise (Approx. 1/2 revolutions)
	P3 Post ↺	Turn P3 Post counter-clockwise (Approx. 1/4 revolutions)
	P2/P3 Posts ↻ ↺	Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1 revolution)

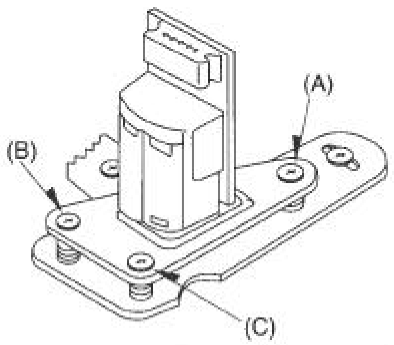
Fig.M8

5-2-(2). ADJUSTMENT OF P4 POST

(1) Install A/C Head on the Mechanism Chassis by one screw.
(2) Playback the Alignment Tape.
(3) Rotate the screw (A) or (B) until the wrinkle appears on the lower edge of tape at P4 Post.
(4) Rotate the screw (A) or (B) until the wrinkle just disappears on the lower edge of tape at P4 Post.
(5) Connect the oscilloscope to audio output terminal.
(6) Rotate the screw (C) until audio signal is maximized.

NOTE:

1. The relation between the rotation direction of screws (A) and (B) and the condition of wrinkle on the lower edge at P4 Post as shown in Fig.M9.
2. Make sure that there is not the inclined wrinkle between P4 Post and Pinch Roller.



	SCREW (A)	SCREW (B)
So wrinkle appears on the lower edge of tape	COUNTER CLOCKWISE	CLOCKWISE
So wrinkle disappears on the lower edge of tape	CLOCKWISE	COUNTER CLOCKWISE

Fig.M9

5-2-(3). HEIGHT ADJUSTMENT OF A/C HEAD

< When moving the A/C Head up >

1) Rotate the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2) Rotate the screw (B) counterclockwise until the wrinkle just disappears on the lower edge of tape at P4 Post.
3) Rotate the screw (C) counterclockwise until the audio signal is maximized.

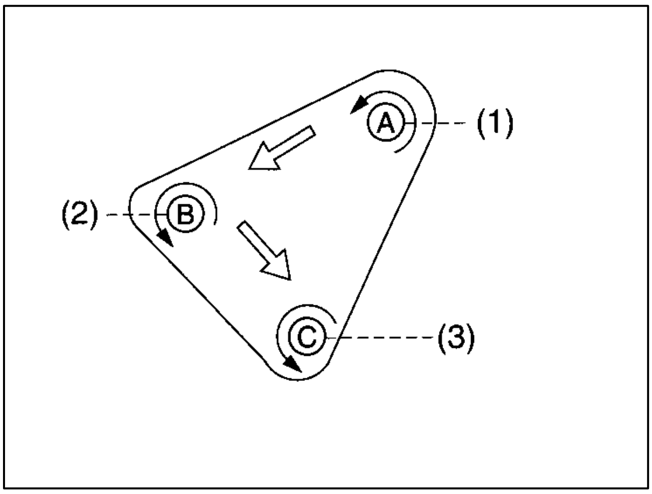


Fig.M10

< When moving the A/C Head down >

1) Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2) Rotate the screw (A) clockwise until the wrinkle just disappears on the lower edge of tape at P4 Post.
3) Rotate the screw (C) clockwise until the audio signal is maximized.

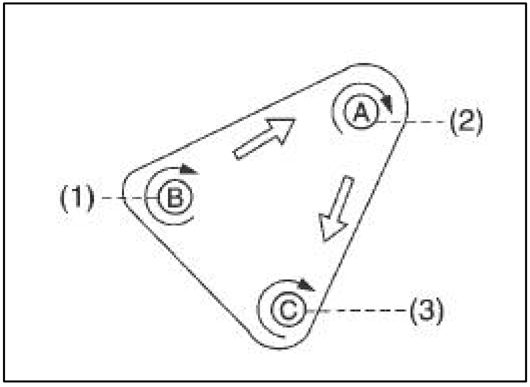


Fig.M11

5-2-(4). FINE-ADJUSTMENT OF A/C HEAD

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig.M3.
(2) Playback the Alignment Tape.
(3) Make sure that the condition of the wrinkle at P4 Post. If the condition of the wrinkle is out of specification, P4 Post adjustment has to be performed as follows.
Turn the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
Turn screw (A) clockwise until the wrinkle disappears on the lower edge of tape at P4 Post.
(4) Turn the screw (C) until the audio signal is maximized.

NOTE:

Make sure that the audio output does not increase when push the upper and lower edges of tape around A/C Head.

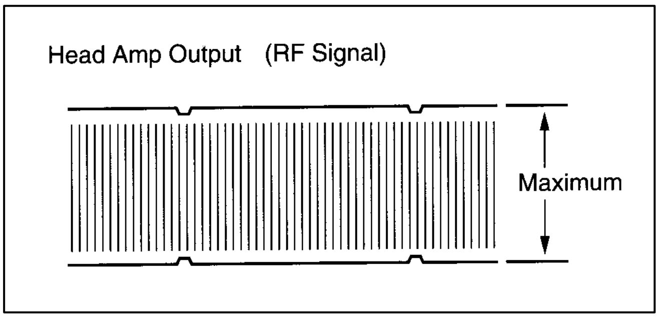


Fig.M12

5-2-(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)

Equipment Required:
Fine Adjustment Gear Driver (VFK0330)
Specification: Less than 15msec.

(1) Connect the oscilloscope to the audio output and the video output.
Both output signals should be fixed by the external trigger.
(2) Playback the Alignment Tape and set the tracking control into center fix position.
(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) to meet the signal fault portion of the audio output and the video output signals (Less than 15msec.).
(4) After meeting the signal fault portion, audio A/C Head position by the Fine Adjustment Gear Driver (VFK0330) until the video envelope is maximized.

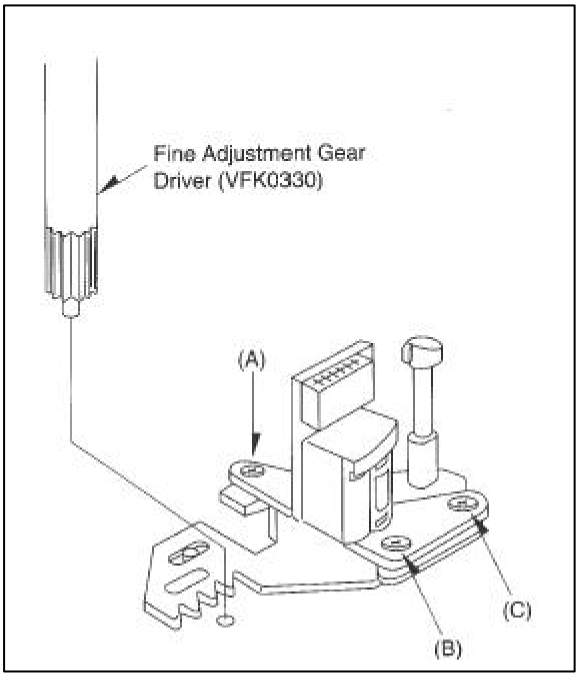


Fig.M13

5-2-(6). FINE-ADJUSTMENT OF X-VALUE

Equipment Required:
Fine Adjustment Gear Driver (VFK0330)

(1) Connect the oscilloscope to the audio output and the video output.

Both output signals should be fixed by the External trigger.

(2) Playback the Alignment Tape and set the tracking control into center fix position.

(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) until the video envelope level is maximized at the tracking center fix position.

NOTE:

During X-Value Fine Adjustment, in case the video envelope level becomes 0, Pre-adjustment of X-Value should be adjusted again due to it is possible to vary the X-Value adjustment.

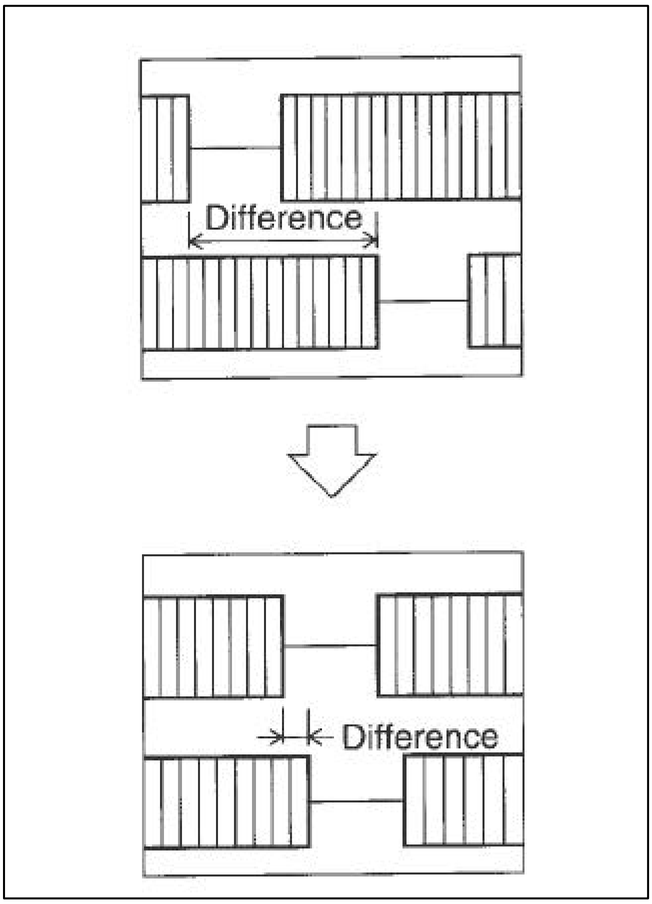
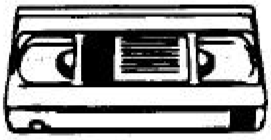
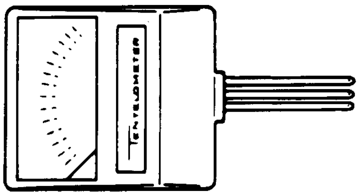
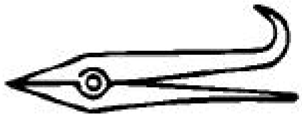
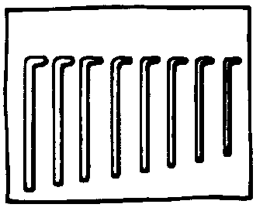
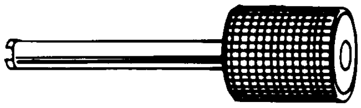
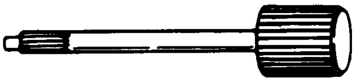
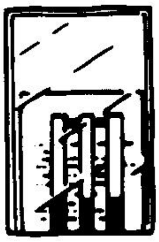
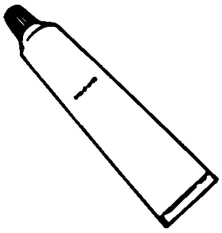
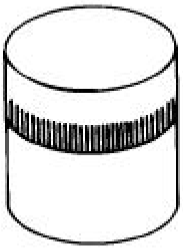
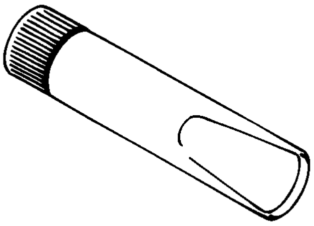
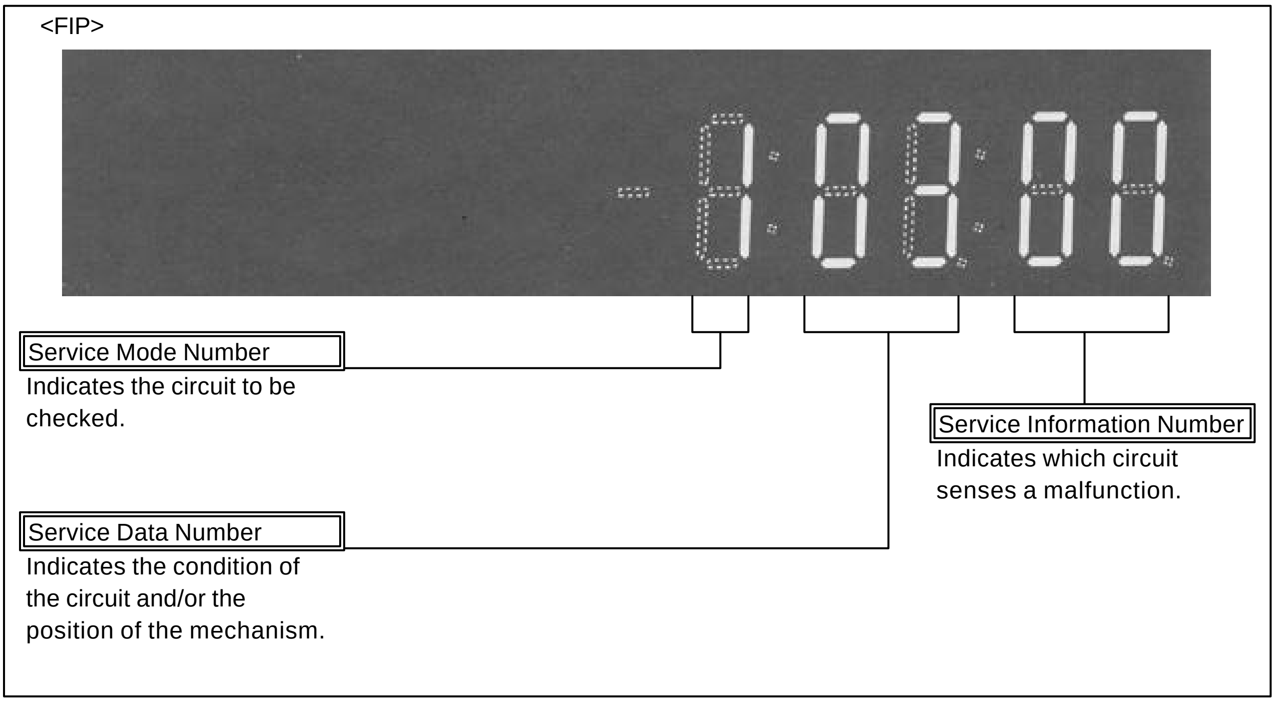


Fig.M14

Servicing Fixture & Tools

VFJ8125H3F PAL VHS Alignment Tape VFM8080HQFP NTSC VHS Alignment Tape 	VFK0132 Back Tension Meter (Tentelometer, Made in U.S.A.) 	VFK0335 Retaining Ring Remover (3mm/4mm) 
VFK0326 Hex. Wrench Set (0.7,0.9,1.2,1.5,1.6,2.0,2.4,3.0mm) 	VFK0329 Post Adjustment Screwdriver 	VFK0330 Fine Adjustment Gear Driver 
VFK27 Head Cleaning Stick 	VFK1024 Morlytone Grease 	VFK1298A Floil Grease 
VFK1301 Silicone Grease 		

6. SERVICE INFORMATION DISPLAY



Service Mode Number
Indicates the circuit to be checked.

Service Information Number
Indicates which circuit senses a malfunction.

Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

6-1. Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the Error. The service mode number & service data number are used by the technician during repair while the service information can be used by consumer to diagnose Error allowing the technician to provide a more accurate repair cost estimate and reduce time.

6-2. Turning on Service Information Display

Press FF, REW and EJECT buttons simultaneously.

In the Service Information Display, there are four digits divided into 3 functions.

The first digit indicates which of the 7 service modes that the unit is currently in.

The second and third digits are service data that indicate the condition of the circuit or the mechanism being checked.

The forth digit is the service information display, it is to be used by the consumer to help determine the source of an Error. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

Service Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
0	Indication for the inner data of IC6001	VCR mode (Real time)	Process number (Real time)	
		VCR mode (OPM)	Management number of the processing during mechanism shifting	
1	Indication for the inner data of IC6001	Starting / finishing edges detecting data (Real time)	Data of receiving key (Real time)	
		00: Both starting / finishing edges have not been detected 01: Starting edge is detecting now 02: Finishing edge is detecting now 03: Both starting / finishing edges are detecting now	Indicate the receiving code when the key of VCR or remote controller being operated.	

Service Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
2	Indication for the inner data of IC6001	Mechanism position (Real time)	Ordering for the Motors (Real time)	There are next conditions in this mode for enable the mechanism operations without a cassette tape. ● The starting / finishing edges are not detected. ● The reel lock is not detected ● The tape and the positions are not detected. , And so on. Press the EJET key for over 3 seconds in this mode, and then the VCR is shifted into the special modes, such as PG Adjustment, Model Code Setting, and so on.
		0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position - : FF/REW position - : Intermediate between each positions	0*, 2*: CYL off, CAP off 1*: CYL off, CAP on (fwd) 3*: CYL off, CAP on (rev) 8*, A*: CYL on, CAP off 9*: CYL on, CAP on (fwd) B*: CYL on, CAP on (rev) *0: Motor off *1: Loading *2: Unloading *3: Break (Load + Unload)	The orders for the motors are as follows. Bit 7: CYL ON/OFF Bit 6: ------------------ Bit 5: CAP FWD/REV Bit 4: CAP ON/OFF Bit 3: ------------------ Bit 2: ------------------ Bit 1: UNLOADING(H) Bit 0: LOADING(H)
3	Self-diagnosis history (1st)	Error number of history 1	Supplementary data 1 and 2 of history 1.	In the Self-Diagnosis Memory, next 3 BYTE is memorized for an Error. 1 BYTE: Its Error number 2 BYTE: Its supplementary data
4	Self-diagnosis history (2nd)	Error number of history 2	Supplementary data 1 and 2 of history 2.	In these modes, the supplementary data 3 and 4 instead of the Error number and supplementary data 1 and 2 are indicated only while pressing STOP key.
5	Self-diagnosis history (3rd)	Error number of history 3	Supplementary data 1 and 2 of history 3.	
6	Indication for the inner data of IC6001	Real time servo data (4 digits) (Real time)		
		Higher rank 1 BYTE of SERVO data	Lower rank 1 BYTE of SERVO data	
7	Manual mechanism operation	Real time mechanism position	Real time ordering for the Motors	Press the STOP key, and then the cassette tape is unloaded.
		0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position - : FF/REW position - : Intermediate between each positions	0*, 2*: CYL off, CAP off 1*: CYL off, CAP on (fwd) 3*: CYL off, CAP on (rev) 8*, A*: CYL on, CAP off 9*: CYL on, CAP on (fwd) B*: CYL on, CAP on (rev) *0: Motor off *1: Loading *2: Unloading *3: Break (Load + Unload)	

7. SELF- DIAGNOSIS INDICATION DISPLAY

This VTR has a self-diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following Error Codes will automatically appear in the VTR display. Error Codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note:

1. The indication "U" is displayed on the FIP while power remains on.
2. The indication "H" or "F" is displayed on the FIP, and the power is automatically turned off. When the power is turned on again, the Error indication code will disappear and the unit will return to normal display mode (either clock or counter is displayed).
3. This Error indication code will be stored in the microprocessor even after the AC plug being disconnected. The two-digit number portion of the stored Error indication code can be re-displayed in "second" display portion (the last 2 digits of the FIP) by placing the unit is Service Mode Number 2 When turning on Service Data Display as for example "01" or "02" etc. If a second error occurs, the most recent error will be displayed and stored until 5 self-diagnosis histories in maximum .
4. To erase the stored Error Code data, Press FF and EJECT buttons on VCR simultaneously for over 5 seconds in Service Mode 2.

Example of Error Indication on the FIP

F 0 5

↓ ↓ ↓

HOUR	10min.	1min.	10sec.	1sec.
Blank	Blank	Management Sign	Service Data No.	

Division of Management

Management Sign	Management Division
U	User can deal with.
H	Shop can deal with.
F	It should be dealt with in service shop.

7-1. TABLE OF DETECTING CONDITION AND MOVEMENT OF MECHANISM IN DETECTING OF THE SELF-DIAGNOSIS FUNCTION

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
U10	**Dew formation** If the voltage at the dew detection input terminal is over 1.36VDC, it judged DEW.	● "U10" is indicated on the FIP when the dew is detected. ● "10" is memorized on the self- diagnosis history. ● The mechanism is unloaded to the LOAD position and wait until the dew is extinct when a tape is in the VCR. ● Cassette in operation is not accepted until the dew is extinct when a cassette tape is not in the VCR. ● The dew is judged extinct and the VCR is returned to normal condition after the voltage at the dew detection input terminal becomes less than 1.36V DC, and moreover 80 minutes passed from then.		Yes
U11	Cylinder clogs during the PLAY mode.		Cleaning the Cylinder.	Yes
H01	**CYL PFG can not be detected when the cylinder starts.** If the CYL PFG could not be detected within 5 seconds when the cylinder starts from the cylinder stop condition in tape loading completion, and so on, the load from tape to the cylinder is ridded by unloading until the LOAD position at once. If the CYL PFG could not be detected within 5 seconds after that, it is judged an Error of the cylinder system.	● "H01" is indicated automatically, and the power is turned to off in the DOWN position. ● Only the power key is accepted, and the Mechanism Initial Operation is performed.	Please check the cylinder motor, cylinder drive circuit and CYL PFG signal circuit.	Yes
H02	**The CAP FG can not be detected during the Mechanism Initial Operation (Tape rewinding by the S-Reel) in LOAD position.** When the power is turned on or the AC is input to the VCR in condition that the mechanism is stopped at LOAD position with a mechanism lock, if the CAP FG could not be detected over 255 pulses during first one second of 5 seconds tape rewinding previous to the re-loading with S-reel, that is judged a Error of the capstan system.	● "H02" is indicated automatically, and the power is turned to off in the DOWN position. ● Only the power key is accepted, and the Mechanism Initial Operation is performed.	Please check the capstan motor, capstan drive circuit and CAP FG signal circuit.	Yes
F03	**The position signal can not be detected within the regulated time for the shift to the aiming position except EJECT position during except unloading when the mechanism position is shifted.** IF the position signal could not be detected within the regulated time which is set depending on the distance to the aiming position when the mechanism is shifting the position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● In the first detection after the mode shift is started, the detection result is not judged an Error, and the Mechanism Initial Operation is performed. ● If the position signal aimed to is not detected again during this Mechanism Initial Operation, it is judged an Error, and "03" is indicated automatically. ● Then the mechanism stops at the position by the automatic power off, and only the Power Key is accepted. ● After the power is turned on, the Mechanism Initial Operation in performed. ● "03" is memorized on the self- diagnosis history.	Please check the Mechanism, Loading Motor, Drive circuit, Drive control signal circuit, Position SW and the Position SW input signal circuit.	Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
F04	**The position signal can not be detected within the regulated time for the shift to the aiming position except EJECT position during unloading when the mechanism position is shifted.** IF the position signal could not be detected within the regulated time which is set depending on the distance to the aiming position when the mechanism is shifting the position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● In the first detection after the mode shift is started, the detection result is not judged an Error, and the Mechanism Initial Operation is performed. ● If the position signal aimed to is not detected again during this Mechanism Initial Operation, it is judged an Error, and “04” is indicated automatically. ● Then the mechanism stops at the position by the automatic power off, and only the Power Key is accepted. ● After the power is turned on, the Mechanism Initial Operation in performed. ● “04” is memorized on the self- diagnosis history.	Please check the Mechanism, Loading Motor, Loading Motor drive circuit, Loading motor drive control signal circuit Position SW and the Position SW input signal circuit.	Yes
F05	**The S-reel pulse can not be detected when the mechanism is unloading.** If the S-reel pulse could not detected over 4 edges when the mechanism is unloading from REV position to LOAD position by the Eject operation, the Cylinder start Error or the Mechanism Initial Operation, it is judged that the S-reel table is not rotated. The judgement depends on the input signal from the S-reel sensor.	● If the Error is detected, “05” is memorized on the self- diagnosis history on the model corresponding to 3 self-diagnosis history memory. ● If the Error is detected, anything is not memorized on the self-diagnosis history and the automatic indication is not indicated on the model not corresponding to 3 self-diagnosis history memory.	Please check the mechanism S-reel system, S-reel sensor, S-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes
F06	**The position signal can not be detected within the regulated time when the mechanism position is shifted for Cassette-up.** If the position signal could not be detected within the regulated time when the mechanism is shifting the position from DOWN position to EJECT position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● If the Error is detected once, “F06” is indicated automatically. ● The mechanism is shifted for Cassette Down because there is a possibility that a odd article is bitten in the cassette holder unit, and the power is turned off when the DOWN position is detected. ● If the DOEN position can not be detected within while 5 seconds at the maximum, the power is turned off at the position. ● After the power off, only the power key is accepted. After the power on, the Mechanism Initial Operation is performed. ● “06” is memorized on the self- diagnosis history.	Please check the Mechanism, Loading motor, Loading motor drive circuit, Loading motor drive control signal circuit, Position SW and the Position SW input signal circuit.	Yes
F07	Error on REC circuit in REC mode.			Yes
F08	Error on REC circuit in except REC mode.			Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
F15	**The capstan FG is not output when Cassette is inserted. (There is a possibility of the capstan system Error.)** If the capstan FG is less than 150 edges during the shift from EJECT position to LOAD position when a cassette is inserted, it is judged Error of the capstan system.	● “15” is memorized on the self- diagnosis history, when the Error is detected. ● The cassette is output.	Please check the capstan motor, capstan motor drive circuit and the CAP FG signal circuit.	No
H16	**Cylinder lock detection during the constant rotation of the cylinder.** If the HS pulse could not be detected over 500msecond during the cylinder is rotating, it is judged an Error of the cylinder system. There is a possibility of that the cylinder is tightened with the tape because the tape tension is risen by the tape load.	● “15” is memorized on the self- diagnosis history, when the Error is detected. ● The mechanism is shifted to OFF position, and the Cylinder is stopped.	Please check the Cylinder motor, Cylinder motor drive circuit and the CYL HSW signal circuit.	No
H17	**S-reel lock detection in constant running of the S-reel.** If the S-reel pulses could not be detected over the regulated time while tape is running, it is judged S-reel lock.	● “17” is memorized on the self- diagnosis history. ● The mechanism is shifted to LOAD position and tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stopped. ● The self-diagnosis history is not remained when an Error in FF or REW, the mechanism is shifted to LOAD position, and then rewinding is performed. ● The mechanism is shifted to PLAY position, and then the pinch pressure runs the tape. ● If an Error is detected again, “17” is memorized on the self-diagnosis history. ● The mechanism is shifted to LOAD position, and then tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stops.	Please check mechanism S-reel system, S-reel sensor, S-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
H18	**T-reel lock detection in constant running of the T-reel.** If the T-reel pulses could not be detected over the regulated time while tape is running, it is judged T-reel lock.	● "18" is memorized on the self- diagnosis history. ● The mechanism is shifted to LOAD position and tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stopped. ● The self-diagnosis history is not remained when an Error in FF or REW, the mechanism is shifted to LOAD position, and then rewinding is performed. ● The mechanism is shifted to PLAY position, and then the pinch pressure runs the tape. ● If an Error is detected again, "18" is memorized on the self-diagnosis history. ● The mechanism is shifted to LOAD position, and then tape rewinding is performed. The mechanism is shifted to PLAY position, and then stops.	Please check mechanism T-reel system, T-reel sensor, T-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes
H80	**Exceptional EJECT** ● If the S-reel pulse is less than 3 pulses between LOAD position and PLAY position when the loading is finished, it is judged miss catching the tape. ● If the rewinding has not finished within the regulated time when the short rewinding on DOWN position, It is judged that the tape could not be rewound. ● If the mechanism lock is occurred during the loading to LOAD position, it is judged that the loading could not be performed. ● If the both ends are detected at LOAD position, it is judged that the tape is cut off.	● EJECT is performed. ● "80" is memorized on the self-diagnosis history ● Reason of the ejection is memorized on the "supplementary data 2".		No
F2*	Error while the PG Automatic Adjustment			Yes

WHAT ARE THE DIFFERENCES BETWEEN Z-MECHANISM & R4-MECHANISM, IN TERMS OF SELF-DIAGONOSIS MODE?

1. **OPERATION AFTER DETECTING THE ERROR:** The Mechanism operation, after detecting the error has been changed.

2.ADDITION OF ERROR NUMBER [H 80].

In very rare cases, although VCR works fine, it might be detected as malfunction.
In such a case, the error code has just memorised in history of self-diagnosis result without displaying it on FIP, to prevent needless afraid of user.
However, its data can be displayed as the supplementary data 2, to clarify the course of Ejection. (Refer to the supplementary data.)

3.DETECTING METHODS of [F15] HAS BEEN CHANGED:

In Z-Mechanism, the error code; [F15] has been detected using S-Reel pulse, it means that
the [F15] shows "S-Reel pulse does not existed although cassette is inserted."
However, in R4-Mechanism, the error code; [F15] has been detected using Capstan FG pulse, it means that the [F15] shows "Capstan FG pulse does not existed although cassette is inserted."

(The reason of this modification is that impossibility of checking the S-Reel pulse due to Mechanism construction change.

7-2. MEMORY OF THE SELF-DIAGNOSIS HISTORY AND THE SUPPLEMENTARY DATA

This is effective only in Service Mode 3, 4, 5.

(Sample)

(1) Error Number and Supplementary Data

The Supplementary Data for each Error number are memorized.

Memory No. (Error No.)	Reason	Supplementary Data	
		Data 1	Data 2
2* (Refer to Note:)	An error while the PG Automatic Adjustment	VCR mode	No Data
80	An exceptional ejection depends on a Error	VCR mode	Reason of Ejection
18	Detection of T-reel lock during the constant tape running	VCR mode	Tape position
17	Detection of S-reel lock during the constant tape running	VCR mode	Tape position
16	Detection of the Cylinder lock during the constant rotation	VCR mode	Tape position
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Counted value of S-reel pulse
14	An exceptional detection of the DOWN position during the unloading.	No Data	No Data
08	The recording circuit is operated in except for REC mode.	VCR mode	No Data
07	The recording circuit can not be operated in REC mode.	VCR mode	No Data
06	Mechanism lock during the Cassette-up.	VCR mode	Stand-by position
05	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Tape position
04	Mechanism lock during unloading	VCR mode	Stand-by position
03	Mechanism lock during without the unloading and the cassette-up.	VCR mode	Stand-by position
02	The CAP FG could not be detected.	VCR mode	No Data
01	The cylinder could not be started. (Error of the cylinder or the cylinder driver.)	VCR mode	No Data
11	Cylinder clogs during the PLAY mode.	VCR mode	No Data
10	Dew detection.	VCR mode	No Data

*** Details of “VCR mode” of the Supplementary Data (These values are hexadecimal indication)**

0: STOP, 1: EJECT, 2: REW, 3: FF, 4:REV, 5: CUE, 6: SLOW, 7: POWEROFF, 8: PLAY, 9: STIL,
A: REC, B: REC PAUSE, C: ADUB, D: ADUB PAUSE, E: INSERT, F: INSERT PAUSE

Note: 2* is as follows.

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

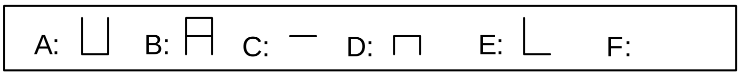
*** Explanation of “Tape position” of the Supplementary Data**

The Tape position Data is the area data of S-reel that is used for judgement of reducing speed in the Main microprocessor IC6001, and as the tape position is moved from the starting edge to the finishing edge, the value becomes smaller.

The Tape Data does not become “0” even if the tape reaches the finishing edge as the hub remains, and the tape position values are different between the large hub and the small hub as the each diameters are different from each other.

Tape Type	The aim of Tape position between the starting edge and the finishing edge
90 min. or over type (Small Hub)	The Tape position is divided into 14 stages between the Tape begining edge: “E “ and the Tape end edge: “1”.
60 min. or less type (Large Hub)	The Tape position is divided into 6 stages between the Tape begining edge: “A “ and the Tape end edge: “5”.

- “A” and “E” is hexadecimal. “A” =10 (Decimal), “E” =14 (Decimal).
- Hexadecimal indication from “A” to “E” are shown below.



- **Description of “Reason of Ejection” of the supplementary Data**

Supplementary Data 2	Reason
1	S-reel pulse is less than 3 when the loading has been completed. (Miss catching the tape)
2	Pulse Timer over during the short rewind at the DOWN position. (Error of S-photo sensor system, S-reel system, Capstan system)
3	Mechanism lock from the DOWN position to the LOAD position during the loading.
4	Both ends have been detected at the LOAD position when the loading is started.

(2) Condition for memorizing of the self-diagnosis history

1. The self-diagnosis result and the supplementary data are the condition memorized just as an Error is detected.
2. There are the histories from number 1 to number 3.
3. The latest Error is memorized on history number 1,and then the old histories are shifted to the history number 2, 3.
4. Put out data from the memory number 3 by the shift is deleted.
5. If the latest Error is same with the history number 1 (2nd-latest), it is not memorized.
   (The same Error number is not memorized in succession)

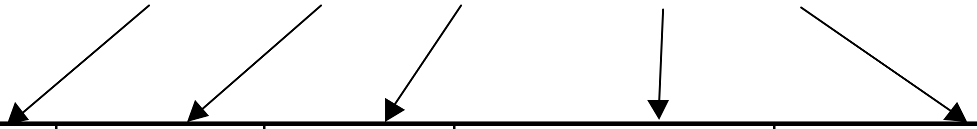
(3) Condition for clearing the self-diagnosis history

1. A case of that press the FF key and the EJECT key simultaneously over 5 seconds.
2. A case of that the factory jumper is shorted.

(3) Indication of the self-diagnosis history.

1. The self-diagnosis histories and its supplementary data could be indicated on the FIP with Service mode of numbers from 3 to 5.
2. The procedure of setting the service mode and the format if the indication are same as usual.

FIP INDICATION: 4 0 3 5 2



Hour of one-digit	Minute of two-digit	Minute of one-digit	Second of two-digit	Second of one-digit
Service mode number	Error number		Supplementary Data	
3	Number of history 1 (The latest)		Supplementary data 1 of history 1	Supplementary data 2 of history 1
4	Number of history 2 (2nd latest)		Supplementary data 1 of history 2	Supplementary data 2 of history 2
5	Number of history 3 (3rd latest)		Supplementary data 1 of history 3	Supplementary data 2 of history 3

Both the Error numbers and its supplementary data of history 1, 2and 3 are indicated by selecting the Service mode 3, 4 and 5 as shown above.

In case of that any Error has not been memorized, the Error number and its supplementary data is indicated as “ - “.

7-3. CHANGE OF MEMORY TIMING FOR ERROR NO. F03 & F04

The F03 means that the mechanism lock has been detected other than during unloading and/or cassette-up condition.

The F04 means that the mechanism lock has been detected during unloading condition.

There are many cases that initial operation is performed once after mechanism lock F03 or F04 has been detected and then the VCR returns to the normal condition.

In Z-mechanism, the self-diagnosis history is not memorized in first mechanism lock, and then only second mechanism lock is memorized.

In this method, it is quit difficult to imagine the reason of the first mechanism lock due to no data of first mechanism lock.

Therefore, memorizing timing for Error code F03 and F04 has been changed so that reason of the mechanism lock could be imagine more easily.

Mechanism lock during the mechanism initial operation cause of a mechanism lock

1. The first mechanism lock has been occurred.
   * In this condition, the applicable Error number (F03 or F04) and its supplementary data are memorized.
   * The mechanism initial operation is started.
2. A mechanism lock has been occurred again during the mechanism initial operation.
   * The Error number (F03 or F04) which is memorized on step 1 is indicated, and then the power is turned off.
3. Turn the power on after step 2, and then the initial operation is started.

The mechanism lock during the mechanism initial operation with returning from an Error or the power failure.

- Mechanism lock during the initial operation from the mid-way position.
  1. "F04 (Unloading Lock)" is indicated, and then the power is turned off.
- Mechanism lock during the initial operation from the fixed position.
  1. A mechanism lock has been occurred.
     * In this condition, the applicable Error number (F03 or F04) and its supplementary data are memorized.
     * The mechanism initial operation is started.
  2. A mechanism lock has been occurred again during the mechanism initial operation.
     * The Error number (F03 or F04) which is memorized on step 1 is indicated, and then the power is turned off.
  3. Turn the power on after step 2, and then the mechanism initial operation is started.

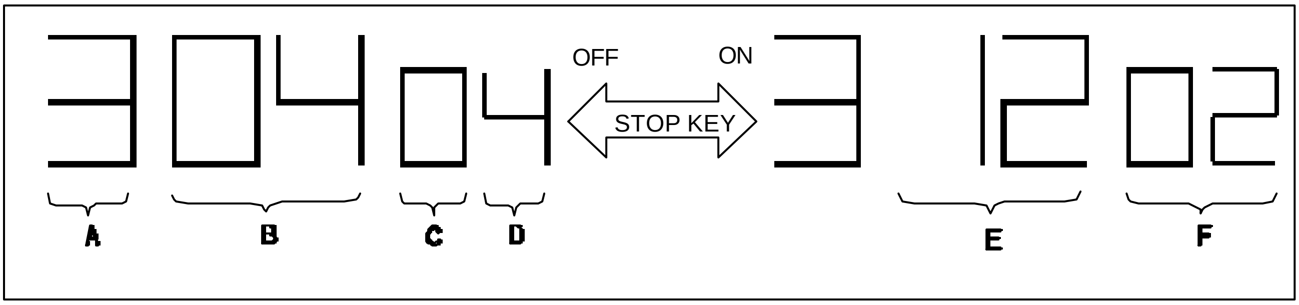
7-4. ANALIZING PROCEDURE FOR MECHANISM ERROR

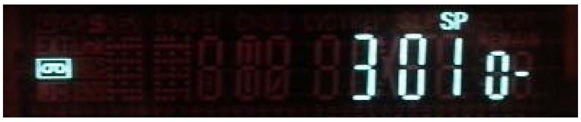
Step No.	Procedures	Operation
1	Set the VCR into SERVICE MODE	Press the FF key and the EJECT key simultaneously for more than 3 seconds.
2	Set the service mode number to "3". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously three times.
3	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
4	Set the service mode number to "4". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously once.
5	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
6	Set the service mode number to "5". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously once.
7	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
8		
9	Memorize the mechanism supplementary data (10F0 ~ 10F9).	Refer to the EXPLANATION OF RAM MONITOR MODE shown below.
10		

Self-Diagnosis history and Memory of the supplementary data

Memory No. (Error No.)	Reason	Supplementary Data			
		Data 1	Data 2	Data 3	Data 4
20/21/22/23	An error during PG Shifter Automatic Adjustment	VCR mode	No Data	Process No.	No data
80	An exceptional ejection depends on a Error	VCR mode	Reason of Ejection	Process No.	No data
18	Detection of T-reel lock during the constant tape running	VCR mode	Tape position	Process No.	Count of FG
17	Detection of S-reel lock during the constant tape running	VCR mode	Tape position	Process No.	Count of FG
16	Detection of the Cylinder lock during the constant rotation	VCR mode	Tape position	Process No.	No data
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Counted value of S-reel pulse	Process No.	Count of FG
14	An exceptional detection of the DOWN position during the unloading.	No Data	No Data	Process No.	No data
8	The recording circuit is operated in except for REC mode.	VCR mode	No Data	Process No.	No data
7	The recording circuit can not be operated in REC mode.	VCR mode	No Data	Process No.	No data
6	Mechanism lock during the Cassette-up.	VCR mode	Stand-by position	Process No.	LM data
5	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Tape position	Process No.	Count of FG
4	Mechanism lock during unloading	VCR mode	Stand-by position	Process No.	LM data
3	Mechanism lock during without the unloading and the cassette-up.	VCR mode	Stand-by position	Process No.	LM data
2	The CAP FG could not be detected.	VCR mode	No Data	Process No.	Count of FG
1	The cylinder could not be started. (Error of the cylinder or the cylinder drive circuit)	VCR mode	No Data	Process No.	No data
11	Cylinder clogs during the PLAY mode.	VCR mode	No Data	Process No.	No data
10	Dew detection.	VCR mode	No Data	Process No.	No data

Example:





(Sample)

A. Service number: 3
B. Memory number: 04(Mechanism lock during Unloading)
C. Supplementary data 1(VCR Mode): 0(STOP)
D. Supplementary data 2(Stand by position): 4(LOAD position)
E. Supplementary data 3(Process number): 12
F. Supplementary data 4(LM data): 02(Mechanism position has been changed)

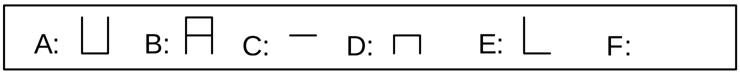
*** Details of “VCR mode” of the Supplementary Data (These values are hexadecimal indication)**
0: STOP, 1: EJECT, 2: REW, 3: FF, 4:REV, 5: CUE, 6: SLOW, 7: POWEROFF, 8: PLAY, 9: STIL,
A: REC, B: REC PAUSE, C: ADUB, D: ADUB PAUSE, E: INSERT, F: INSERT PAUSE

*** Details of “Stand-by position” of the Supplementary Data (These values are hexadecimal indication)**
E: EJECT, 2: DOWN, 3: RREW, 4: LOAD, 5: REV, 6: PLAY, 7: POFF, 8: STOP_R, 9: STOP_F, C: FF/REW

*** Explanation of “Tape position” of the Supplementary Data**
The Tape position Data are the area data of S-reel that is used for judgement of reducing speed in the microprocessor IC6001, and as the tape position is moved from the starting edge to the finishing edge, the value becomes smaller.
The Tape Data does not become “0” even if the tape reaches the finishing edge as the hub remains, and the tape position values are different between the large hub and the small hub as the each diameters are different from each other.

Tape Type	The aim of Tape position between the starting edge and the finishing edge
90 min. or over type (Small Hub)	The Tape position is divided into 14 stages between the Starting edge: “E “ and the finishing edge: “1”.
60 min. or less type (Large Hub)	The Tape position is divided into 6 stages between the Starting edge: “A “ and the finishing edge: “5”.

- “A” and “E” is hexadecimal. “A” =10 (Decimal), “E” =14 (Decimal).
- Hexadecimal indication from “A” to “E” are shown below.



*** Description of “Reason of Ejection” of the supplementary Data**

Supplementary Data 2	Reason
1	S-reel pulse is less than 3 when the loading has been completed. (Miss catching the tape)
2	Pulse Timer over during the short rewind at the DOWN position. (Error of S-photo sensor system, S-reel system, Capstan system
3	Mechanism lock from the DOWN position to the LOAD position during the loading.
4	Both ends have been detected at the LOAD position when the loading is started. (Tape has been cut off)

*** “Process No.” of the supplementary Data**
The process number is memorized when an Error has occurred. (Refer to the Timing Chart of R4 Mechanism).
*** “Count of FG” of the supplementary Data**
Count of FG for 20 msec. when an Error has occurred.
*** “LM information” of the supplementary Data**
Data of the requirement for driving the loading motor.
Mechanism position has not been changed: 1
Mechanism position has been changed: 2
*** Mechanism supplementary data**

Offset (10F0H)	Data
0	OPM history 1 (Latest)
1	OPM history 2
2	OPM history 3
3	OPM history 4
4	OPM history 5 (Oldest)
5	Cumulative total of Hunting times. (Max: 255)
6	Cumulative total of passing the aimed position. (Max: 255)
7	Cumulative total of retry times for FF/REW direct connection. (Max: 255)
8	Cumulative total of retry times for DOWN FF/REW direct connection. (Max: 255)
9	Cumulative total of mechanism initial operation with a mechanism lock. (Max: 255)

*** Description of “OPM” (VCR mode)**

OPM (VCR mode)	No.	OPM (VCR mode)	No.
STOP	0x00	RSTILL	0x19
EJECT	0x01	SYPLAY	0x28
REW	0x02	AIREC	0x2a
FF	0x03	SYRECPS	0x2b
REV	0x04	SYINSERTPS	0x2f
CUE	0x05	SHREW	0x42
SLOW	0x06	SHFF	0x43
POWEROFF	0x07	SHPLAY	0x48
PLAY	0x08	REMSTOP	0x60
STILL	0x09	REMREW	0x62
REC	0x0a	REMFF	0x63
RECPS	0x0b	ASPLAY	0x88
ADUB	0x0c	ASREC	0x8a
ADUBPS	0x0d	ASADUB	0x8c
INSERT	0x0e	ASINSERT	0x8e
INSERTPS	0x0f	RHADUB	0xac
RSLOW	0x16	RHINSERT	0xae
RREV	0x14	RNTREW	0x32
RPLAY	0x18	RNTFF	0x33

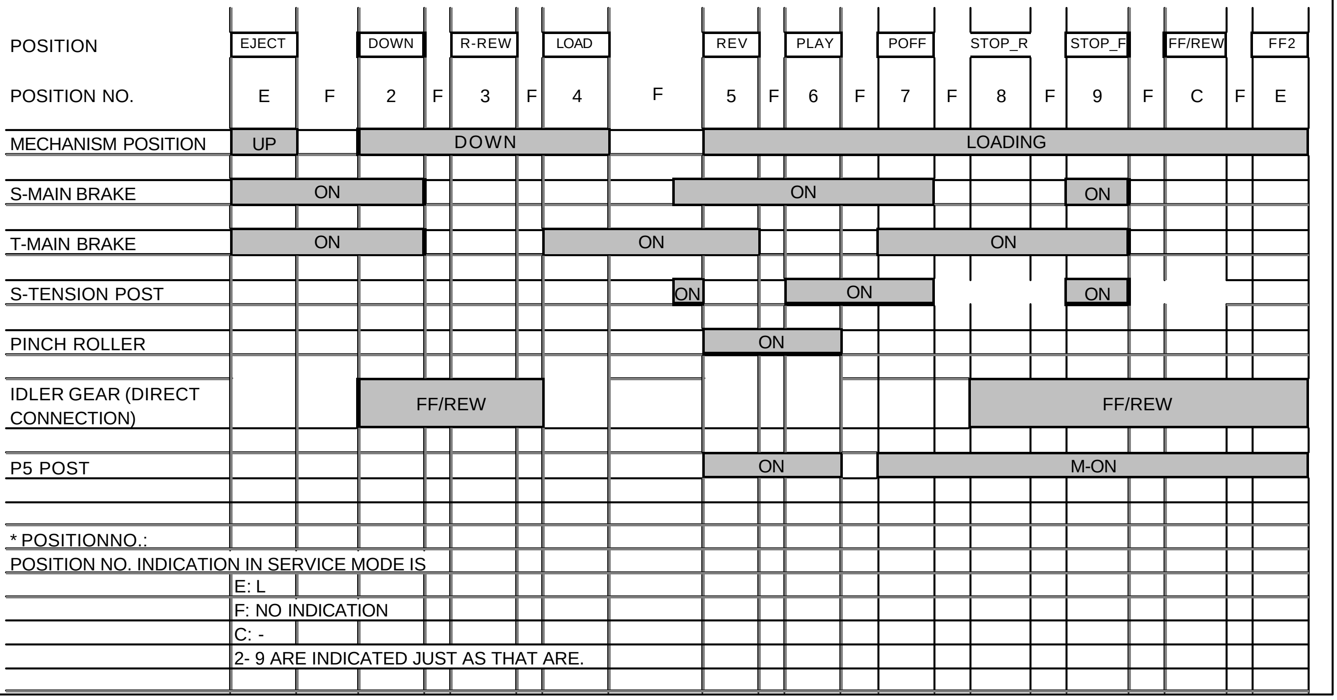
8. TEST MODE

When the test terminals are shorted during the condition that AC plug is off, the following operation will be performed after AC power is applied. Test Mode Information will be displayed on FIP.

(1) Power will be turned on automatically when AC power is applied.
(2) The direct operations of buttons can be performed.
(Example) PLAY↔ REC, REC↔ EJECT

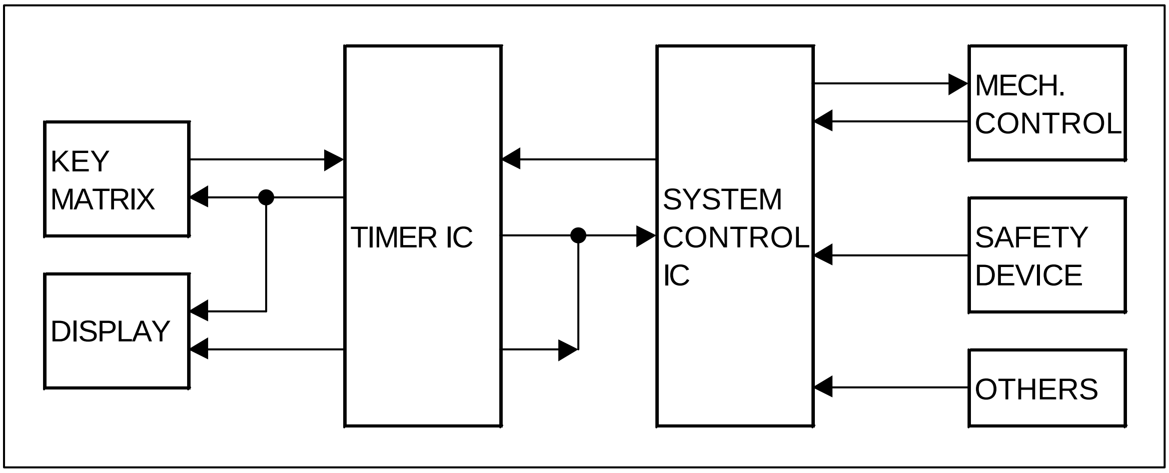
9. TIMING CHART OF MODE SW

Relationship between the Mechanism Position and the Mechanism Condition


POSITION
EJECT
DOWN
R-REW
LOAD
REV
PLAY
POFF
STOP_R
STOP_F
FF/REW
FF2
POSITION NO.
E F 2 F 3 F 4 F 5 F 6 F 7 F 8 F 9 F C F E
MECHANISM POSITION
UP
DOWN
LOADING
S-MAIN BRAKE
ON
ON
ON
T-MAIN BRAKE
ON
ON
ON
S-TENSION POST
ON
ON
ON
PINCH ROLLER
ON
IDLER GEAR (DIRECT CONNECTION)
FF/REW
FF/REW
P5 POST
ON
M-ON

* POSITIONNO.:
POSITION NO. INDICATION IN SERVICE MODE IS
E: L
F: NO INDICATION
C: -
2- 9 ARE INDICATED JUST AS THAT ARE.

10. SYSTEM CONTROL CIRCUIT



10-1. MODE TRANSITION

The relation between the present mode and operation key is shown in the following table.

10-1-1. Basic mode action (without EDIT function)

Present mode	Operation Key							
	P-SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC
P-OFF	P-ON	EJECT	----------	----------	----------	PLAY	----------	----------
EJECT	P-OFF	----------	----------	----------	----------	----------	----------	----------
STOP	P-OFF	EJECT	*3	REW	FF	PLAY	----------	REC
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	----------	----------
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	----------	----------
REV	P-OFF	EJECT	STOP	----------	*1	PLAY	*2	----------
CUE	P-OFF	EJECT	STOP	*1	----------	PLAY	*2	----------
PLAY	P-OFF	EJECT	STOP	*1	*1	----------	*2	----------
STILL	P-OFF	EJECT	STOP	*1	*1	PLAY	PLAY	RECPS
REC	P-OFF	----------	STOP	----------	----------	----------	RECPS	----------
REC/PS	P-OFF	----------	STOP	----------	----------	----------	REC	----------

*1: The mode is changed to CUE/REV Lock when the FF/REW button is pressed briefly (for less than 0.7 sec.) at PLAY, STILL and REV modes. If it is pressed for more than 0.7 sec., CUE/REV mode continues as long as the key is depressed and is cancelled when the key is released.

*2: The mode is changed to STILL when the PAUSE key is pressed briefly (for less than 1 sec.) at other than STILL mode. Pressing and holding the PAUSE key, the mode is changed to STILL once, and after 1 sec. changed to 1/10 SLOW.

*3: The mode is changed to EJECT if the STOP button is pressed for more than 3 sec. when a cassette is in the mechanism.

10-1-2. Basic mode action (with EDIT function)

Present mode	Operation Key									
	P-SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC	ADUB	INSERT	JOG
P-OFF	P-ON	EJECT	--------	--------	--------	PLAY	--------	--------	--------	--------	--------
EJECT	P-OFF	---------	--------	--------	--------	--------	--------	---------	--------	--------	---------
STOP	P-OFF	EJECT	*3	REW	FF	PLAY	--------	REC	--------	--------	JSTILL
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	---------	---------	--------	--------	JSTILL
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	--------	--------	--------	--------	JSTILL
REV	P-OFF	EJECT	STOP	--------	*1	PLAY	*2	--------	--------	--------	JSTILL
CUE	P-OFF	EJECT	STOP	*1	--------	PLAY	*2	--------	--------	--------	JSTILL
PLAY	P-OFF	EJECT	STOP	*1	*1	--------	*2	--------	--------	--------	JSTILL
STILL	P-OFF	EJECT	STOP	*1	*1	PLAY	PLAY	RECPS	ADUBPS	INSPS	JSTILL
REC	P-OFF	---------	STOP	--------	--------	--------	RECPS	--------	--------	--------	RECPS
REC/PS	P-OFF	---------	STOP	--------	--------	--------	REC	--------	--------	--------	REC
ADUB	P-OFF	---------	STOP	--------	--------	--------	*2	--------	--------	--------	JSTILL
ADUB/PS	P-OFF	---------	STOP	--------	--------	--------	ADUB	--------	--------	AVINSPS	ADUB
INSERT	P-OFF	---------	STOP	--------	--------	--------	*2	--------	--------	--------	JSTILL
INSERT/PS	P-OFF	---------	STOP	--------	--------	--------	INSERT	--------	AVINSPS	--------	INSERT
JOG STILL	P-OFF	EJECT	STOP	--------	--------	PLAY	PLAY	RECPS	ADUBPS	INSPS	PLAY

10-2. BASIC ACTION IN MECHANISM

10-2-1. Position SW and main action at each position

There are 7 kinds of absolute position and undefined sections between each position in R4 mechanism. They are regulated as follows, according to the input from position switch.

	Cassette Out >>>>> Mechanism Position >>>>>											
Position	EJECT		DOWN		R-REW		LOAD		REV		PLAY	
Position No.	E	F	2	F	3	F	4	F	5	F	6	F
		>>>>>Cassette In										
			P. OFF		STOP_R		STOP_F		FF/REW		FF2	
		F	7	F	8	F	9	F	C	F	E	

EJECT: Cassette Out
DOWN: From DOWN FF/REW to Brake, Remove the white tape on the DOWN position
R-REW: FF/REW on the DOWN
LOAD: Tape Rewinding when the AC On Time, DEW Standby, Waiting the Cylinder Rotation
REV: REV
PLAY: PLAY, CUE STILL, SLOW, REC
P.OFF: P.OFF, Timer Standby
STOP_R: From High Speed REW to Brake
STOP_F: From FF to Brake and From Slow REW to Brake
FF/REW: FF/REW

10-2-2. Mechanism initializing action at each position

Mechanism is initialized when AC is input, the power is recovered from power stoppage, or the power is turned on again after power off condition caused by mechanism lock. Initializing action differs depends on the mechanism position as described below.

(1) At FF/REW, R-REW position, tape is wound for 60 sec. According to the VCR mode before initializing occurs: If initializing has occurs at FF mode, tape is wound in forward direction; and if it has occurred at REW mode, tape is wound in reverse direction. After winding is terminated, mode changes to the stand-by mode.
(2) At undefined position (section between two absolute positions), DOWN, REW, PLAY or P.OFF STOP_F, STOP_R position, tape move to LOAD position once, and wound at LOAD position, and then loaded again. Then, mode changes to stand-by mode.
(3) At undefined position between EJECT and DOWN, cassette is ejected, and initializing finishes.
(4) At LOAD position, S-reel is rotated for 5 sec. To tighten ape. After that, tape is loaded again, and mode changes to stand-by mode at P.OFF or PLAY position.
(5) At EJECT position, Initializing finishes without any action.

If the key signal is received during mechanism being initialized, mode display changes. However, actual mode change is performed after initializing has completed.

10-2-3. Mechanism action in sand-by condition after cassette is inserted

(1) When a non-write protected tape is inserted, the tape is loaded and mechanism stands by at PLAY position in STOP mode.
(2) When a write protected tape is inserted, the tape is loaded and mode changes to PLAY mode.
(3) When standing by at PLAY position, loose the tape in order to reduce tape tension.
(After capstan stops, rotate the tape in reverse direction for FG80 counts.)
(4) When approx. 5 minutes passed during stand-by at PLAY position, mode changes to the stand-by at P.OFF position.
(5) When the power is turned off during stand-by at PLAY position, mode changes to stand- by position at P.OFF position.
(6) When the timer stand-by operation is done during stand-by at PLAY position, mode changes to stand-by position at P.OFF position.
(7) When the power is turned on in power off condition, mode changes to stand-by at PLAY position from at P.OFF position.
(8) When the timer stand-by id cancelled, mode changes to stand-by at MID position from at PLAY position.
(9) When STOP operation is performed in other than EJECT or POFF, such as PLAY or REC, mechanism waits at PLAY position.

10-2-4. Mechanism action in EJECT operation

(1) After a cassette tape is inserted, if EJECT is operated before it reaches the LOAD position, the tape moves to the LOAD position and then mechanism immediately gets in setting up action to eject the tape.
(2) After a cassette tape is inserted, if EJECT is operated after it passes the LOAD position, the tape is completed loading up to the PLAY position once. After that mechanism action switches to unloading.

10.3. SUPPLY AND TAKE-UP SENSORS

Supply and Take-up phototransistors are used to sense the beginning and end of tape. The tapes has transparent leaders enter the tape transport path, they allow infrared light from the sensor LED to reach either one of the tape end sensors (phototransistor).

If the Take-up end sensor detects the light, the microprocessor SYSTEM CONTROL IC places the VCR in the Stop mode and then performs a short Cue.

If the supply end sensor is triggered, the microprocessor activated the Stop mode and the Rewind mode.

The Rewind mode continues until that the Take-up end sensor detects the end of the tape. The tape beginning is detected by a low signal at SYSTM CONTROL IC Supply photo terminal.

If the light is received at both sensors at same time, cassette is ejected.

10-3-1. Detection timing

Start and end edges are detected in VCR mode when capstan rotates and mechanism shifts its position. LED always lights during power on.

10-3-2. Sensitivity of detecting the start and end edges of tape

1. Transparent tape that has more than approx. 50% transparency according to VHS standard is detected.
2. Tape that has less than approx. 3% transparency according to VHS standard is not detected.

10-3-3. Action after start and end edges are detected

Mode	**Detection of the start edge**	**Detection of the end edge**	**Detection of both edges**
POWER OFF → ON	SHORT CUE *1	SHORT REW *2	STOP
CASSETTE IN	SHORT CUE *1	SHORT REW *2	EJECT
LOADING	SHORT CUE *1	SHORT REW *2	STOP
PLAY/REC/CUE/FF/SLOW/STILL/ADUB/INSERT	--------------	AUTO REW	STOP
RPLAY/REV/RSLOW	SHORT CUE *1	---------------	STOP
REC PAUSE SHORT REW	--------------	---------------	STOP
TIMER REC/OTR AV2PB(H) REC	--------------	SHIRT REW *2 → POWER OFF	STOP or P-OFF
PLAY OFF TIMER	--------------	AUTO REW → POWER OFF	STOP or P-OFF

*1: SHORT CUE is to shift to STOP after rotating the tape until white part of tape is over. When other mode such as PLAY is set during detecting the start edge, mode shift to the required mode after the white part of tape is wound.

*2: SHORT REW shifts to STOP or POFF after REW is performed for approx. 2 sec. in actual time.

Both ends of tape detection (tape cut, no cassette)

(1) Cassette in: The cassette tape id ejected

(2) Other mode: The unit goes to Stop mode and it is impossible to operate except eject key.

(3) Timer REC: Power is turned off after short CUE is performed.

10-4. SAFETY TAB SWITCH

A recorded video cassette tape can be protected against accidental erasure by breaking off the tab on the cassette tape. The cassette tape can now only be used for playback. To be able to record on the cassette, cover the hole with adhesive tape. If the safety tab on the cassette has been removed, Safety Tab Switch is off (open) and high signal is supplied to SYSTEM CONTROL IC will not go into the recording mode and automatically place the VCR in the playback mode. If trying to set REC, ADUB or insert, cassette mark flashes to warn.

10-5. DEW SENSOR

If excessive moisture or condensation is present inside the machine (an internal humidity of more than 98%) the unit will stop if running. Until the moisture level decreases only the Eject mode will operate. To sense the humidity, a dew sensor is used. The sensor is a special variable resistor, which change resistance ambient humidity.

The sensor range in resistance from about 5K ohm at 90% humidity to about 50K ohm at 98% humidity. Normally, the voltage across the sensor is low because of its low resistance.

But if the moisture condenses inside the unit, the voltage at Dew terminal of SYSTEM CONTROL IC increases to indicate the Dew condition.

Tape	**Mode**	**Dew sensor ON**	**Dew sensor OFF**
OUT	Power	Compulsory Power on	Power off
	Dew indication	Indicate “d” and “U10”	Normal display
	Cylinder	Rotate forcibly *1	Normal mode
	Key operation	Not possible *2	Possible
	Cassette in	Immediately a cassette is ejected after it goes to cassette down position.	Possible
IN	Power	Compulsory power on	Power off
	Dew indication	Indicate “d” and “U10”	Normal display
	Cylinder	Rotating *1	Normal mode
	Key operation	Not possible *2	Possible
	Cassette condition	Shit to DOWN position and waits for removing dew	Possible

*1: When the cylinder locks in dew mode, it will be released until dew sensor is turned off.

*2: The keys not relating to the tape running operation are able to used. Switching CH and Audio are effective.

Dew sensor on: During Dew formation is detected and 80 minutes after completion of Dew detection.

Dew sensor off: 80 minutes after completion of Dew detection, because the Dew Sensor dries faster than mechanism due to their heat capacity.

10-6. SAFETY TIMER

10-6-1. Holding time of special playback and stand-by mode

Special playback and stand-by modes are automatically cancelled after fixed time, in order to protect tape and VCR. The table below shows VCR mode and its holding time.

VCR Mode	Holding time	Mode after holding time has been over
STILL	Approx. 5 sec.	STOP
RSTILL	Approx. 2 sec.	STILL (PLAY position)
PAUSE(REC/ADUB/INSERT)	Approx. 5 min.	STOP
CUE/REV	Approx. 10 min.	PLAY
SLOW/RSLOW	Approx. 10 min.	STOP
STOP(Stand-by at PLAY position)	Approx. 5 min.	Stand-by at MID position. Cylinder stops.

10-6-2. Detecting mechanism lock during mode shift

When the mode does not reach aimed position within certain time after the loading motor started, it is recognized as mechanism lock and mechanism shifts to lock detection function.

Detecting time differs depends on in which timing lock has occurred. However, lock is detected within 5 sec. Maximum.

Mode change and action after lock is detected are as follows.

Mode change	Action and detecting lock
During cassette in	Cassette out
During cassette down	Cassette up → Cassette out
During loading	Unloading → Cassette out
FF → STOP	● Stop the loading motor once, and restart it for STOP direction after 5 sec. ● P-OFF when the second lock is detected.
Other mode changes	P-OFF immediately

10-6-3. Detecting reel lock

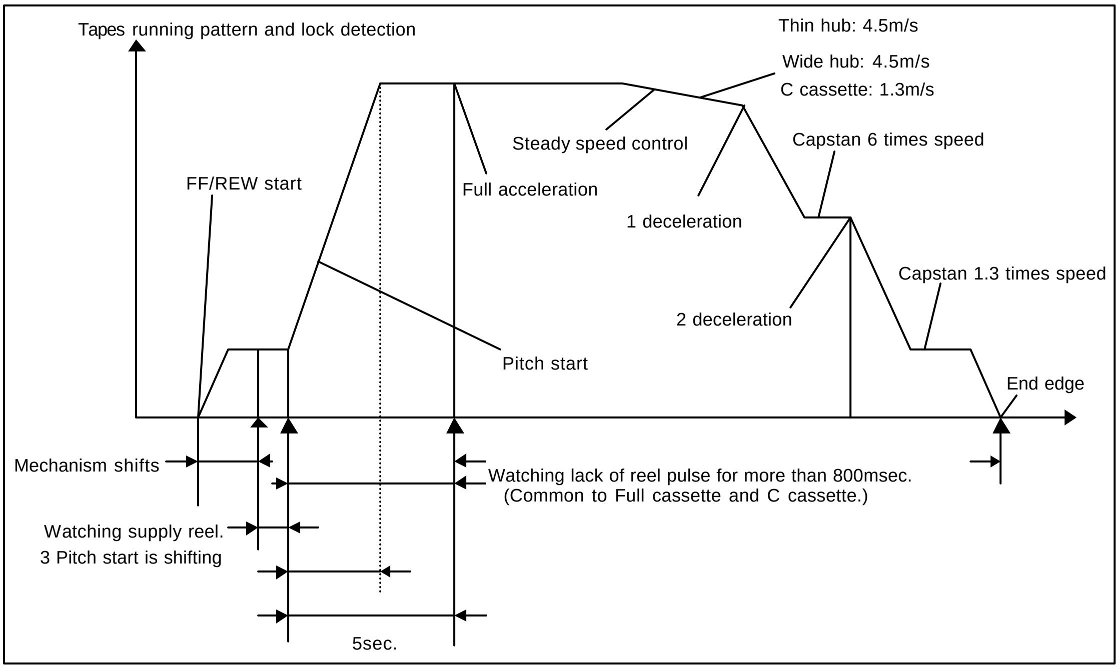
During tape running such as PLAY, CUE/REV or FF/REW, if reducing tape speed or reel mount stop is detected, these are recognized as reel lock. In this case, in order to protect tape and capstan driver, switch the VCR mode to STOP, or switch the tape running drive to capstan drive from reel drive.
Reel lock detection time is different depends on the mechanism position or capstan speed, in order to minimize the tape quantity which is wound between when the reel lock has occurred on take-up side and when the lock is detected by IC6001.

(1) PLAY, CUE/REV mode (PLAY/REV position)
In each running mode, if reel pulse edge is not input for period shown in the table below after finishing the mode change, reel lock is detected and mode changes to STOP mode.

NTSC				PAL			
Speed	VCR mode	Times	Value	Speed	VCR mode	Times	Value
2H	PLAY	± 1	3.5s	3H	PLAY	± 1	3.5s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	1.6s
		± 7,9	0.3s			± 7,9, 11	0.3s
		± 11	0.2s			± 15	0.2s
4H	PLAY	± 1	3.5s	6H	PLAY	± 1	3.5s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	1.6s
		± 9, 11, 13	0.3s			± 11, 15, 17, 19	0.3s
		± 13	0.2s			± 27	0.2s
6H	PLAY	± 1	3.5s	9H	PLAY	± 1	5.1s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	2.66s
		± 11, 21, 27	0.3s			± 11, 15, 17, 19	0.5s
		± 35	0.2s			± 35	0.34s
10H	PLAY	± 1	5.1s				
	CUE/REV	± 2, 5	2.66s				
		± 11, 21, 27	0.5s				
		± 35	0.34s				

(2) FF/REW mode (FF/REW position)
If one of the following conditions exists, reel lock is detected. Rotation mode changes to Pinch roller mode (FF changes to CUE, and REW changes to REV), and rotation continues.

1. When more than 5 sec. has passed after moving to FF/REW position and waiting for reel pulse detection in supply side.
2. When reel pulse is not detected for more than 2 sec. Continuously after 5 sec. passed since the mechanism mode has finished to change (process number =0). (common to Full and C)
3. When reel pulses is not detected for more then 800 ms continuously after 5 sec. passed since the mechanism mode has finished to change. (common to Full and C)


Tapes running pattern and lock detection
Thin hub: 4.5m/s
Wide hub: 4.5m/s
C cassette: 1.3m/s
Steady speed control
Capstan 6 times speed
FF/REW start
Full acceleration
1 deceleration
Capstan 1.3 times speed
2 deceleration
Pitch start
End edge
Mechanism shifts
Watching lack of reel pulse for more than 800msec.
(Common to Full cassette and C cassette.)
Watching supply reel.
3 Pitch start is shifting
5sec.

10-6-4. Detecting cylinder lock

When cylinder Error in starting or lock in modes that cylinder rotates, such as PLAY, CUE/REV or FF/REW is detected, following actions are performed to protect tape.

Cylinder condition	Lock detection	
Starting	● When the rotation has not reached the fixed rotation speed within 5 sec. after stop condition, starting error is detected and the unload starts up to DOWN position keeping VCR mode.	
Unloading caused by starting Error	● When starting is detected within 5 sec. at DOWN position, load again and keep the current VCR mode. ● When starting is detected within 5 sec., cylinder Error is detected and power turns off.	
Normal rotation	● When HSW edge has not been detected for more than 0.5 sec., lock is detected.	
	Timer REC	Changes to POWER OFF mode.
	FF/REW	Functions brake and restart FF/REW. If lock has been detected for 2 times continuously, changes to STOP mode and mechanism stand by MID position.
	Others	Changes to STOP mode. Mechanism stands by at MID position.

10-7. Automatic features

VTR has several automatic features that always function without any settings. Explanations of each feature are described below.

(1) Auto Power On

If cassette is inserted in POWER OFF condition without cassette in, the power automatically turns on and the cassette is successfully inserted.

(2) Auto Play

When write-protected tape is inserted, VTR is automatically set to PLAY after loading.

(3) Auto Rewind

If the end edge of the tape is detected during tape running, REW starts automatically, and then stops at the start edge.

(If the end edge is detected during TIMER REC, REW is not performed. Tape stops running and the power immediately turns off.)

(4) Power Off Eject

If the EJECT key is pressed in POWER OFF condition, VCR is automatically set to POWER ON → EJECT → POWER OFF.

(5) Touch-On-Play

When the cassette is held in VCR in POWER OFF condition, if the PLAY key is pressed, the power automatically turns on and VCR starts to play.

(6) Auto remain calculation

When the customer open timer check screen, if cassette tape with tab, VCR calculates remain time automatically.

When the cassette tape is inserted, if timer check screen is opened, VCR calculates remain time automatically.

11. MOTOR DRIVE SECTION

The motor drive (Capstan, Cylinder & Loading motor) IC becomes all new. Both of the cylinder motor drive circuit and the loading motor drive circuit are included in IC2501.

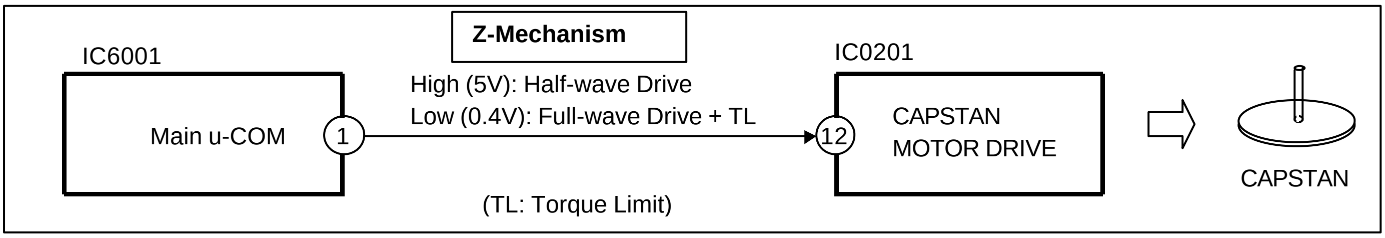
11-1.CAPSTAN DRIVE CIRCUIT

There are two major different points between Z-Mechanism and R4-Mechanism described as follows:

		Z-Mechanism	R4-Mechanism
1. High speed driving mode	High-speed Driving mode (FF, REW, CUE, REV)	Half-wave drive	Full time Full-wave drive
	Other than above mode	Full-wave drive	
2.Drive signal has been changed:		Linear drive signal	PWM drive signal

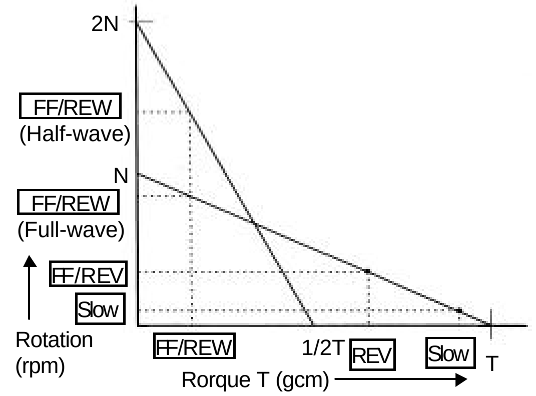
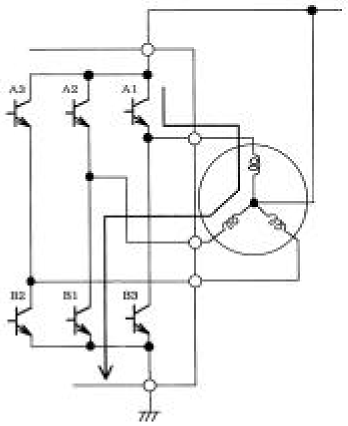
1.R4 Mechanism employs Full time Full-wave drive method

The Z-Mechanism uses both full-wave and half-wave drive depends upon VCR Mode.
In Z-Mechanism, the half-wave motor drive method is used in high-speed driving mode(such as FF, REW, CUE and REV mode), in stead of full-wave motor drive method.
(The half-wave and full wave is switched by TL (Torque Limit) signal which is supplied to IC0201(CAPSTAN MOTOR DRIVE IC) -pin12.)



However, the R4-Mechanism employs full-wave driving method in any time.
What are the difference between half-wave drive and full-wave drive?

In generally, each methods has following features:

	Features		
Half-wave driving method	*Driving Torque: SMALLER		
	*Number of rotation: HIGHER		
Full-wave driving method	*Driving Torque: BIGGER		
	*Number of rotation: LOWER		

NOTE:
It is quit difficult to say which method is better, but, in generally, since the full-wave driving method uses two phases in a path, relation between current, voltage and generated torque are efficient compared with half-wave driving method.(Half-wave driving method uses only one phase in a path.)

WHAT ARE THE DIFFERENT BETWEEN Z-MECHANISM & R4 MECHANISM IN TERMS OF HIGH SPEED MODE?
The immediate conclusion is that the method to be increasing the tape winding speed is different.
In terms of the Z-Mechanism, the number of Capstan rotation is increased to increase the tape winding speed.
(Therefore, Z-Mechanism uses half-wave driving method in high speed driving mode.)
In case of the R4 Mechanism, Reel rotation speed is increased with changing the gear ratio compared with R4-Mechanism.
(Suppose, while capstan rotates in a time, Reel table rotates 10 times, in terms of Z-Mechanism.
However, in R4-Mechanism, Reel table rotates 20 times, while one capstan rotation.
Therefore, R4-Mecanism is able to use the full-wave driving method in high speed driving mode.)

2.R4 Mechanism employs PWM (Pulse Width Motor) as Capatan Motor Drive Signal in REC or PLAYBACK mode

To improve power consumption value, R4-Mechanism uses PWM signal as Capstan Motor drive signal instead of Linear driving signal which is used in Z-Mechanism.

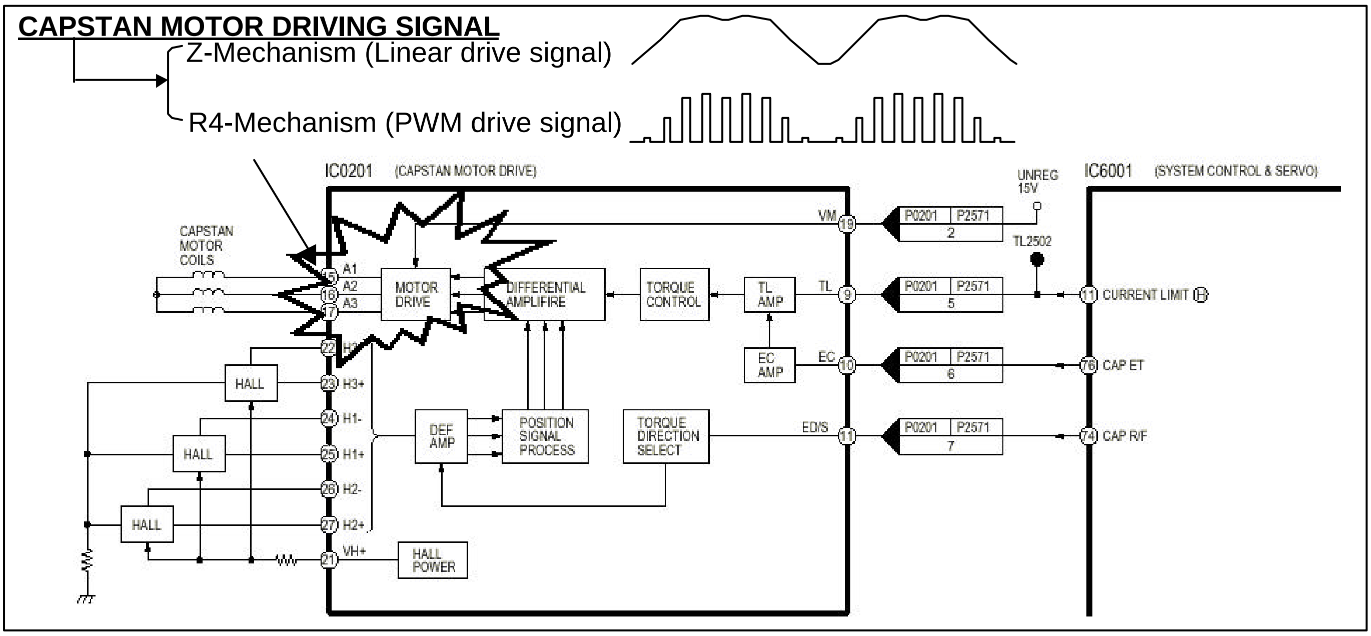
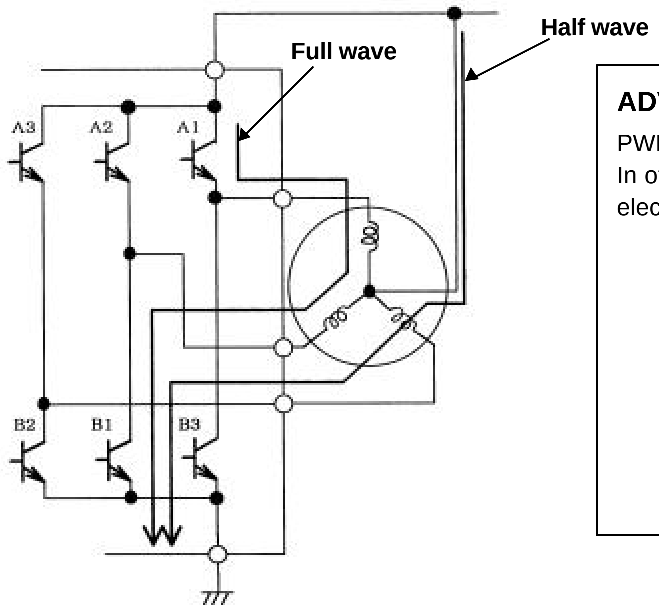

CAPSTAN MOTOR DRIVING SIGNAL
Z-Mechanism (Linear drive signal)
R4-Mechanism (PWM drive signal)
IC0201 (CAPSTAN MOTOR DRIVE)
IC6001 (SYSTEM CONTROL & SERVO)
UNREG 15V
TL2502
CAPSTAN MOTOR COILS
A1
A2
A3
MOTOR DRIVE
DIFFERENTIAL AMPLIFIRE
TORQUE CONTROL
TL AMP
EC AMP
VM
TL
EC
ED/S
P0201 P2571 2
P0201 P2571 5
P0201 P2571 6
P0201 P2571 7
CURRENT LIMIT
CAP ET
CAP R/F
HALL
H3+
H1-
H1+
H2-
H2+
VH+
DEF AMP
POSITION SIGNAL PROCESS
TORQUE DIRECTION SELECT
HALL POWER

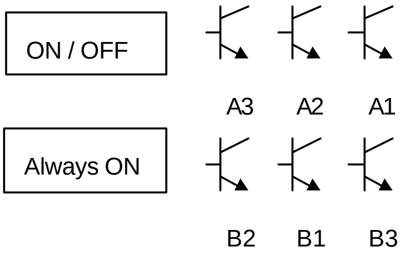
Fig.MD1

PWM CAPSTAN MOTOR DRIVE

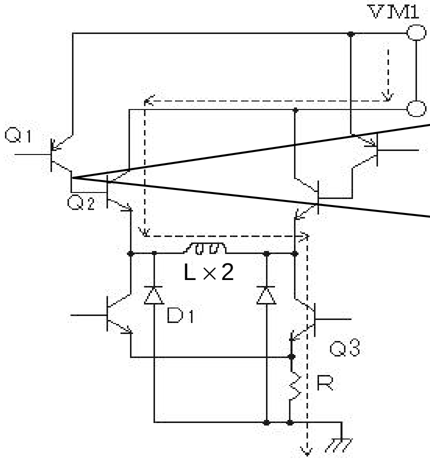

Full wave
Half wave
A3
A2
A1
B2
B1
B3

ADVANTAGE OF PWM DRIVE

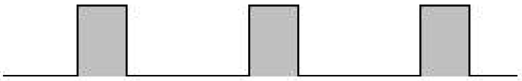
PWM drive turns on the Transistors for half time of duty.
In other than above time, motor is driven with the reverse electromotive force.


ON / OFF
A3
A2
A1
Always ON
B2
B1
B3

PWM Input [In the positive period]



PWM Input Waveform at Q2-b



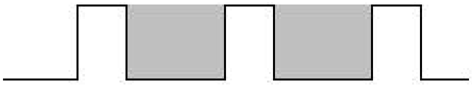
(Motor Power)

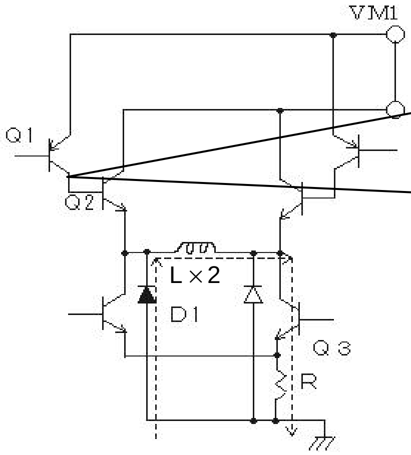
The motor current in positive period of PWM drive is flows as follows.

VM1→ Q2→ L→ Q3→ R

PWM Input [In the negative period]

PWM Input Waveform at Q2-b





(Motor Power)

The motor current in negative period of PWM drive is flows as follows by the reverse electromotive force.

D1→ L→ Q3→ R

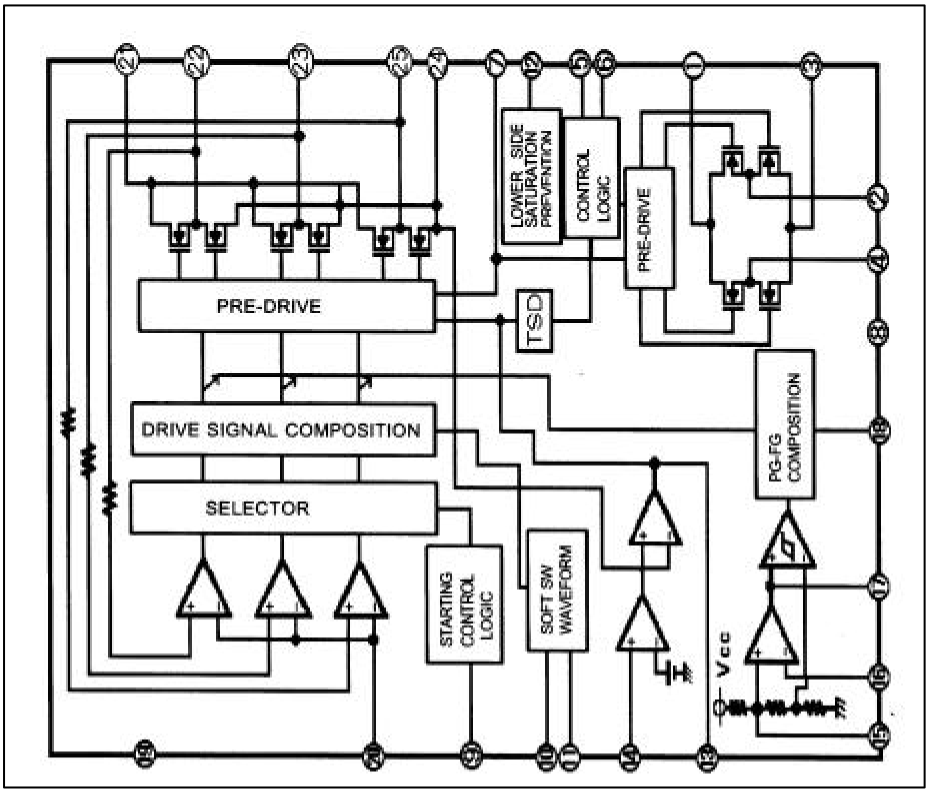
11-2.CYLINDER DRIVE AND LOADING MOTOR DRIVE CIRCUIT

The Cylinder and Loading Motor IC is combined one piece of IC named IC2501.
The simplified block diagram and I/O chart for IC2501 are shown below.

IC2501 (BD6656FP-E2)
I/O CHART

PIN NO.	I/O	TERMINAL NAME	DESCRIPTION
1	IN	VM2	Power of the loading section.
2	OUT	OUT 1	Motor output of the loading motor.
3	---	L GND	GND of motor output of the loading section.
4	OUT	OUT 2	Motor output of the loading motor.
5	IN	F IN	Control input of the loading section.
6	IN	R IN	Control input of the unloading section.
7	IN	VG	Power for DMOS VG.
8	---	GND	GND for the signal section.
9	IN	CST	Capacitor connection terminal for oscillation of cylinder starting.
10	IN	CT 1	Capacitor connection terminal for slope of the cylinder.
11	IN	CT 2	Capacitor connection terminal for slope of the cylinder.
12	IN	PC 1	Capacitor connection terminal for phase compensation of the cylinder.
13	IN	CNF	Capacitor connection terminal for phase compensation of the cylinder.
14	IN	EC	Torque order input terminal for the cylinder.
15	IN	PG +	PG + input terminal for the cylinder.
16	IN	PG -	PG - input terminal for the cylinder.
17	OUT	PG OUT	PG 3 state output terminal.
18	OUT	PFG OUT	PG/FG 3 state output terminal.
19	IN	VCC	Power for the signal section.
20	IN	COM	Center of the cylinder motor coils.
21	IN	VM 1	Power terminal for the cylinder motor.
22	OUT	U	Output terminal for the cylinder motor.
23	OUT	V	Output terminal for the cylinder motor.
24	IN	RNF	GNG for the cylinder motor.
25	OUT	W	Output terminal for the cylinder motor.

IC2501 (BD6656FP-E2) INTERNAL BLOCK DIAGRAM


21
22
23
25
24
7
12
5
6
1
3
LOWER SIDE SATURATION PREVENTION
CONTROL LOGIC
PRE-DRIVE
2
4
8
PRE-DRIVE
TSD
DRIVE SIGNAL COMPOSITION
18
PG-FG COMPOSITION
SELECTOR
STARTING CONTROL LOGIC
SOFT SW WAVEFORM
17
Vcc
16
15
19
20
9
10
11
14
13